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PART I.

ORIGINAL COMMUNICATIONS.

ART. X.—*Contributions to Operative Surgery (continued).* By HENRY GRAY CROLY, Fellow and Licentiate of the Royal College of Surgeons in Ireland; Licentiate of the King and Queen's College of Physicians; Surgeon to the City of Dublin Hospital; Lecturer on Clinical Surgery; Senior Demonstrator of Surgical and Descriptive Anatomy in the School of the Royal College of Surgeons, &c., &c.

Cases of Large Tumours Successfully Removed by Operation (Illustrated), and a Report of Malignant Tumours Unfit for Operation.

I.—ENORMOUS PENDULOUS TUMOUR (OF 14 YEARS' GROWTH), OCCUPYING THE RIGHT PAROTIDEAN SPACE AND SIDE OF THE NECK—EXCISION—COMPLETE RECOVERY, WITHOUT DEFORMITY.

II.—LARGE TUMOUR (OF 5 YEARS' GROWTH) SITUATED ON THE INSIDE OF THE RIGHT THIGH, SUCCESSFULLY REMOVED.

III.—LARGE FIBRO-CYSTIC TUMOUR (18 MONTHS' GROWTH) OF THE SCROTUM, INVOLVING THE RIGHT TESTIS—SUCCESSFULLY EXCISED.

IV.—TUMOUR, OF STRUMOUS ORIGIN, INVOLVING THE LEFT TESTIS—CASTRATION—RECOVERY.

V.—SERO-CYSTIC TUMOUR OF THE BREAST—AMPUTATION—RECOVERY.

THE following cases are examples of large tumours occupying

respectively the neck, thigh, scrotum, and breast; and, although not essentially malignant in their character, yet, owing to their enormous bulk, weight, and situation, were productive of serious discomfort, inconvenience, and deformity, demanding removal by surgical operation. Each tumour was situated in a region containing important blood-vessels, and other structures, requiring careful and cautious dissection in the removal. I also subjoin an account of several cases of other large tumours—cases in which, though urgently pressed upon by the patients and their friends, I was most unwillingly obliged to decline operative interference, the symptoms having presented features indicative of malignant disease of the worst form, and, therefore, entirely unsuited for operation.

The result of those cases proved the correctness of such practice.

CASE I.—*Enormous Pendulous Tumour (of 14 Years' Growth), occupying the Right Parotidean Space, and Side of the Neck—Excision—Complete Recovery, without Deformity.*

M. C., aged forty-six years, a laundress, unmarried, residing in the country, and whose general health had been always good, was admitted into the City of Dublin Hospital on the 10th of March, 1868, under my care.

History.—About fourteen years ago she noticed a small kernel in front of her right ear. The swelling gradually increased in size, and was three years growing before it became as large as an apple. It was movable under the fingers, and occasionally caused some pain, like the darting of needles. The tumour increased proportionately more within the last three years than previously to that period. She suffered considerable annoyance latterly from the hideous deformity and great weight of the tumour, rendering her unfit to appear in public, or earn her bread. She was obliged to support the swelling by means of a broad handkerchief made into a sling, which she tied over her head. She was for many years deterred from submitting to operation, fearing a fatal termination, until a few days before her admission into hospital, when the dependent part of the tumour suddenly gave way, and she lost a considerable amount of dark-coloured blood, which alarmed and debilitated her so much that she decided upon having the tumour removed.

Appearance of the Patient and Tumour on Admission into Hospital.—She presents a pale but otherwise healthy aspect, and has not any constitutional indication of malignant disease, the

pallor being referable to loss of blood. The tumour grows from the right parotidean space, is pendulous, and covers the side of the neck, presenting a most remarkable and huge swelling. Its shape is somewhat oblong, with slight hour-glass constriction; the integument covering the growth is of natural colour; superficial veins ramify on the surface. The lower end, from which the blood issued, is ulcerated. The surface is even, except at the upper and anterior part, where there are two tubercles about the size of marbles. The tumour is movable, firm, and very heavy, measuring eight inches in the long axis, and reaching down almost to the nipple of the breast; the circumference at the pedicle is twelve inches. A drawing of the patient, exhibiting the tumour, was made by Mr. Burnside, from which the accompanying lithograph was taken by Herr Tomsohn (Forster and Co.), and presents a faithful delineation of the case (*vide* Plate I., Fig. 1).

Treatment before Operation.—The tumour was placed resting upon moulded pasteboard, lined with wadding cotton, and suspended by a broad bandage from the curtain-rail surrounding the bed for the purpose of lessening the congestion of the diseased mass, and by diminishing the size of the blood-vessels, rendering the operation less hazardous, as well as adding to the comfort of the patient by taking off the weight of the tumour. The patient was ordered nourishing diet, having been daily supplied with brandy and egg beaten up, wine, strong beef essence, and mutton chop, with quinine and iron mixture, to restore her health, debilitated by the hemorrhage. At a consultation with my surgical colleagues it was unanimously decided that the tumour should be removed by operation, which I accordingly performed on the 25th of March, in the presence of the hospital staff and a large assemblage of hospital surgeons and students. The patient took a glass of brandy beaten up with two eggs in the morning, and a glass of brandy, previous to the inhalation of chloroform, which was administered in her bed, from which she was removed to the operation theatre, with the poles and sheet, and placed on the operating table. The common carotid artery, at the right side, was compressed by an assistant, and the tumour having been raised I commenced by making an elliptical incision through the integuments underneath the pedicle of the tumour, extending obliquely from the lobe of the ear towards the angle of the mouth. A second similar incision was then made across the anterior surface of the pedicle. The flaps of integument thus

formed (and of ample size to allow for retraction) were rapidly dissected from the tumour, which was then detached from its site by my fingers and the handle of the scalpel. The facial vessels, parotidean space and masseter muscle, were thereby exposed. I next proceeded to separate the diseased mass from under the jaw, and from behind the ear. During these steps of the operation very little blood was lost, but a sudden gush issued on dividing the deep-seated pedicle. Ten vessels required ligatures, fine hemp being used. The masseteric branch of the internal maxillary artery, which was of large size, bled profusely. I seized it with some fibres of the muscle in the artery forceps, and applied a short hemp ligature. The bleeding still continuing, I introduced under the vessel, and close to the lower maxilla, a long acupressure pin, and with a loop of inelastic iron-wire passed over its point, and fastened with a half-hitch around the head-end, I controlled the hemorrhage. The pin was placed in the long axis of the wound so as to permit of removal. The surface of the wound was next sponged with cold water, and then with carbolic acid oil (1 part to 5). The edges of the wound were approximated, and retained with six points of twisted suture (American pins being used). Strips of adhesive plaster were applied between the sutures, and a compress of lint was placed beneath the jaw, and retained by adhesive plaster, to support the lower flap.

The patient recovered from the anesthesia, and took some brandy and water. She was then removed to her bed, which was comfortably arranged, with a hot jar, and she was so thoroughly unconscious of the operation having been performed that she asked, "When will it be done?!!!" and was equally surprised and delighted on hearing that it *had* been performed.

5 o'clock, p.m.—Pulse 120; patient has slept since operation; stomach inclined to be sick; she took ice and whey.

10 o'clock, p.m.—Pulse 120; muscles of expression of right side partially palsied (caused by the unavoidable division of some branches of the portio dura nerve). Ordered 25 minims of solution of muriate of morphia in camphor julep.

March 26th (day after operation).—Patient had some sleep; pulse 100. Ordered chicken broth, brandy, and ice.

The patient progressed favourably from day to day. The acupressure pin was removed on the third day; not a drop of blood followed. A portion of the wound in the centre united by "the first intention," the remaining portions having granulated.

Fig. 1. *Profile view after removal of Tumour.*
(From a Photograph.)

Fig. 2. *Front view after removal of Tumour.*
(From a Photograph.)

The facial paralysis soon disappeared, and the patient made an excellent recovery, and within six weeks from the day of operation was discharged from the hospital, and returned home. Photographs have been taken by Lawrence, from which the accompanying lithographs (by Forster) were executed, showing the absence of any deformity, and in striking contrast with the hideous appearance before operation.—(Plate II., Figs. 1 and 2.)

A section of the diseased mass having been made after removal, it was found to present the usual characters of fibrous and fatty tissue. A microscopic examination confirmed the opinion expressed before operation—that the tumour was not malignant.

Case II.—*Large Tumour (of 5 Years' Growth), situated on the Inside of the Right Thigh, Successfully Removed.*

J. S., aged twenty-four years, a labourer, and a powerfully muscular man, residing in the county of Donegal, was admitted into the City of Dublin Hospital on the 29th of November, 1864, under my care.

History.—About five years previously he felt a small kernel, about the size of a hazel nut, on the inner and posterior part of his right thigh, near the central third of the limb; it was a hard, movable, subcutaneous, and painless swelling. He received no injury, and could not in any way account for the growth. During the first three years it increased very little in size, but for the past two years it has grown rapidly, and caused some pain, which continued for two or three days at a time. He did not seek medical advice until six months ago, when he became anxious in consequence of the daily enlargement of the tumour, which interfered with the free movements of his limb, and prevented him from working. He then sought the advice of my friend Dr. Welsh, of Ballyshannon, who recommended him to me.

Appearance of the Patient and Tumour on Admission.—Patient in robust health, and says he suffers little or no annoyance from the disease, except the inconvenience of its bulk. On examination a tumour, the size of a large cocoa nut, is observed, occupying the inner and posterior aspect of the thigh, projecting more backwards than forwards. It is uniform in shape, very movable in the long axis of the limb, but not so much so in the transverse direction; firm, yet elastic to the touch; one spot, the size of a penny, on the centre of the tumour is especially hard, feels like cartilage, and is the only part which is painful on pressure. The growth extends

into the upper part of the popliteal space. There are not any vessels ramifying on its surface. The femoral artery can be felt pulsating along the internal and anterior border of the tumour as far as its upper third, but not below that point. A beautiful cast of the patient's thigh and leg, showing the position of the tumour, is preserved in the museum of the Royal College of Surgeons. The tumour is $9\frac{1}{2}$ inches from above downwards, and $13\frac{1}{2}$ inches transversely (*vide* Plate III., Fig. 2). There is not any glandular contamination, and no œdema of the limb. On consultation with my colleagues it was decided that the tumour should be removed, and I accordingly operated on the 3rd of December in the following manner:—The patient having been placed on the operation table, and turned on his side so as to expose the internal and posterior portion of the tumour, a tourniquet was placed upon the femoral artery, but not tightened, in order to arrest hemorrhage, should it be found necessary. I commenced by making elliptical incisions in the long axis of the tumour, and removed a small portion of integument. I divided the fascia on a director, and soon reached the cyst, which presented a glistening appearance, with some muscular bands stretched across it. These having been divided, I used the handle of the knife towards the internal part to avoid the femoral vessels. With the use of my fingers I then rapidly surrounded the tumour, and completely detached it. The great sciatic nerve was seen in the bottom of the wound. A few muscular branches of arteries were ligatured, the cavity was filled with lint, and a roller bandage applied. The patient was carried to bed, and took some wine.

Evening visit.—There has been slight oozing from the wound, but not enough to justify the removal of the dressings. The patient looks well. Ordered 30 minims of the solution of muriate of morphia in camphor julep, to be taken if necessary to produce sleep.

December 4th (day after operation).—Pulse 80. Patient slept well. Bandage and lint, stained with blood, which oozed from the cavity, were removed. Edges of the wound were approximated by means of six interrupted iron wire sutures. A large compress of lint was placed at either side of the wound, and supported by strips of adhesive plaster applied so as to give additional support. A roller bandage was next carefully applied from the toes, and carried to the upper part of the thigh.

December 5th.—Pulse 100. Patient slept some hours.

Fig. 1.

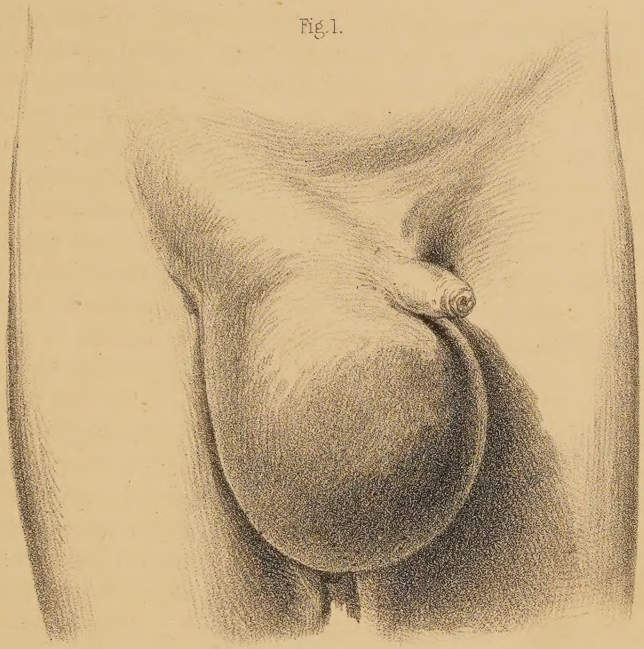
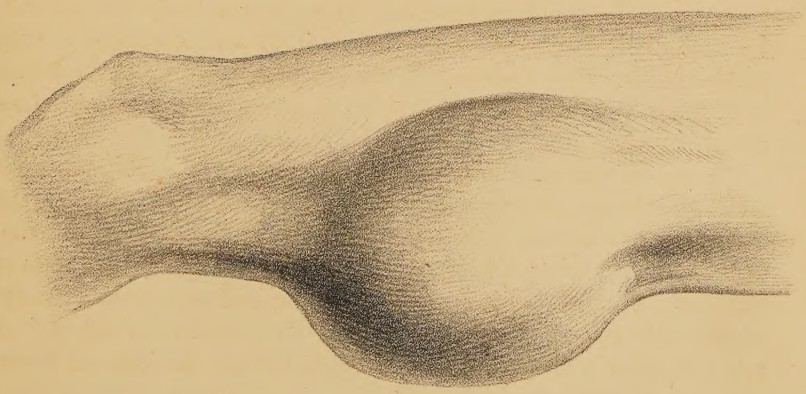


Fig. 2.



Forster & Co Lith Dublin

December 6th.—Patient does not feel so well to-day. His tongue is covered with a white fur. His skin is hot, and pulse quick. Bandage removed. Slight purulent discharge from the wound.

December 7th.—Wound suppurating freely. Sutures removed. Cavity washed out with water and solution of chloride of zinc. Warm water dressing applied. Patient taking wine, beef tea, and whey.

December 8th.—Pulse 88. Skin cool. Copious discharge of sanious pus from the wound.

It is not necessary to give the daily notes of this case. The patient made a good recovery, and the wound healed. He was discharged from hospital.

Tumour weighed 34½ ounces, and was invested in a strong fibrous capsule. On section a sero-sanguineous fluid escaped. The interior of the mass presented a number of cysts containing clotted blood, some being empty. One portion of the tumour presented a cerebriform appearance, and the hard part which was felt before operation cut like cartilage.

Case III.—*Large Cystic Tumour* (18 *Months' Growth*) *of the Scrotum, involving the Right Testis, Successfully Removed.*

A. L., aged nineteen years, groom to a nobleman in the King's County, was admitted under my care into the City of Dublin Hospital, on the 24th of October, 1863.

History.—Eighteen months previously he received a hurt in the right testis from the shoulder of a horse whilst exercising him. He took no notice of it for three weeks, when he observed a slight enlargement of the testis. It increased in size gradually, and soon became as large as an egg. He consulted a medical gentleman in the country, who prescribed cold lotions, from which he derived some benefit. He continued at his usual occupation. The tumour enlarged gradually, and seriously inconvenienced him. Various local applications were tried from time to time, and he took medicines, but no remedy checked the growth of the tumour. He was then recommended to come to Dublin and place himself under my care.

Appearance of Patient and Scrotum on his Admission.—The patient is a muscular young man, and appears to be in sound health. On examination the right side of the scrotum was found to be very much enlarged. The swelling commences in the inguinal canal,

above the external abdominal ring, and gradually enlarges. The tumour is about the size of a cocoa-nut; is heavy, solid, and slightly elastic. The rugæ are obliterated, and the raphe is pushed to the opposite side. The integuments are not adhering. One part of the tumour feels like a cyst. I punctured it with an exploring needle. Sero-sanguineous fluid escaped, which was examined microscopically. No cancer cells were detected. The left testis is of natural size. Measurement of tumour;—from commencement of swelling in the inguinal canal to the lower part of the scrotum, 8 inches; circumference of scrotum, 16 inches (*vide* Plate III., Fig. 1). A consultation was held, and it was decided that the tumour should be removed. The patient was accordingly brought into the operation theatre, placed upon the table, and chloroformed, which was done with unusual facility. Having grasped the tumour behind, I commenced by making an incision through the integuments from the external abdominal ring to the bottom of the scrotum; the several coverings were rapidly cut through, and on opening the tunica vaginalis some serous fluid escaped. The spermatic chord was isolated by a few touches of the scalpel, and prevented from retracting by means of a piece of tape, which was firmly tied around it, the ends being held by an assistant. I next divided the spermatic chord, and secured each vessel separately in a ligature, and then, with the handle of the knife, detached it from the septum scroti, and, lastly, I dissected the mass from the bottom of the scrotum. There was very little hemorrhage from the scrotal vessels. Cold water was poured into the cavity to remove any clots of blood. The edges of the wound were approximated by means of interrupted iron wire sutures (a free opening being left at the dependent part to allow any purulent discharge to escape). When the operation was completed (which was in a very few minutes), the patient was attacked with the following alarming symptoms, although, as above stated, he inhaled but half a drachm of the purest chloroform, and was in sound health, having no cardiac or other internal disease:—Stertorous breathing, eyes fixed, dilated pupils, cessation of respiration, muscular rigidity, lividity of the countenance, absence of pulse at the wrist; in a word, the patient seemed to be dead. The following treatment was promptly adopted, in which I was ably assisted by my colleagues, Professor Hargrave and Mr. Tufnell, also by the resident pupils and dressers:—Artificial respiration by Silvester's method; electricity was cautiously used, a needle having been

passed down to the phrenic nerve at the root of the neck, and another to the diaphragm. A gum elastic male catheter was passed up into the rectum, and ether with brandy injected. A free current of air was produced by opening the windows, and fanning the patient's face. Friction to the extremities and trunk was also used, and sinapisms were applied to the calves of the legs and over the heart. This treatment was steadily persevered in for nearly an hour before there was any marked improvement. Our efforts were finally rewarded by the resuscitation of the patient. He was soon sufficiently restored to allow of his removal to bed. His face was blue for several days. The wound healed by granulation. The patient's strength was supported with wine, beef tea, and bark mixture. On the 6th day after operation the patient was seized with rigors, and the discharge from the wound assumed an unhealthy appearance. These unfavourable symptoms passed away. Subsequently there was a swelling along the track of the spermatic chord, and threatened formation of matter. Poultices of linseed meal were applied, and abscess did not result. The tumour weighed 24½ ounces, and on section was found to consist of fibrinous masses, with cysts containing blood and serum. The testis, which was of cerebriform appearance, was imbedded in the upper part of the tumour.

The patient was discharged from hospital on the 16th of March, 1864. He has since then corresponded with me frequently, and remains in sound health, and free from any return of the disease.

Case IV.—*Tumour of Strumous Origin, involving the Left Testis—Castration—Recovery.*

M. C., aged thirty-five years, a labourer, resident in the Queen's County, was recommended to me by my friend Dr. Joseph Clarke, of Mountmellick, and was admitted into the surgical ward of the City of Dublin Hospital on the 13th of June last.

History.—Three years ago the left testis became tender and swollen. It gradually increased in size to the present time. Within the last ten days a small spot ulcerated on the front of the tumour. The patient suffers pain like the "sting of a nettle," and he also experiences a dragging feel in the region of the spermatic chord and loins. He says he never suffered from venereal disease.

Condition of Patient and Appearance of Tumour on Admission into Hospital.—His general health appears to be good. The left testis is about the size of a large orange. There are several large veins ramifying over its dependent part. The tumour is heavy. There is one ulcerated spot on the anterior part about the centre, and a prominent point which looks as if it would burst and form a similar ulcer. The spermatic chord feels thickened. There is no glandular enlargement observable. The right testis is of natural size. The patient was under surgical treatment for many months, but nothing seemed to take any effect on the size of the tumour. On consultation with my colleagues it was decided that the tumour should be removed, as the testis was completely destroyed by the disease, and, by causing irritation, prevented the patient from working. I accordingly operated in the following way on the 17th of June. The patient was placed on the operation table, and, when chloroformed, his buttocks were lifted to the end of the table (the hair was removed previously from the pubes and scrotum). I grasped the tumour behind, and made an elliptical incision through the integuments with a scalpel, commencing at the external abdominal ring, and terminating at the lower part of the scrotum. A second elliptical incision of the same length was then made, which included the ulcerated part, and prevented any diseased integument being left. The spermatic chord was carefully dissected out, and held firmly by an assistant in Ricord's forceps. The chord below the forceps was divided, and the vessels were tied separately; the lower part of the chord was then drawn forwards, and the testis dissected from the bottom of the scrotum, to which it was firmly united by adhesions. In separating the organ from the septum the handle of the knife was used to avoid wounding the artery of the septum or the opposite testis. Several bleeding vessels in the scrotum were tied. The wound was left open to allow the surface to glaze, and the patient was carried to bed. Pieces of ice were placed in the cavity, and the part was left exposed to the air. In a few hours, as all oozing ceased, I removed some small clots of blood, and sponged the entire surface of the wound with carbolic acid and oil. The edges of the wound were brought together with interrupted iron wire sutures.

The section of the testis exhibited a well-marked example of strumous disease. A drawing was made by Mr. Burnside of the scrotum before operation, and a coloured drawing of the section of the tumour.

Case V.—*Sero-Cystic Tumour of the Right Breast—Amputation—Recovery.*

M. H., aged forty-four years, residing in this city; married; had two children; previous health good; received an injury of the right breast by a fall on the 1st of April, 1863. The breast soon became enlarged, and occasionally slightly painful; not increased at the appearance of the catamenia. She was admitted into the City of Dublin Hospital on the 1st of July, when she presented the following condition:—Right mamma considerably larger than the left. A swelling is observed (situated two and a half inches above and internal to the nipple) divided in the centre, presenting an hour-glass shape, each portion of the tumour being of the size of a walnut; these fluctuated on pressure. On feeling the breast a hard tumour was found three inches in extent. There was no glandular contaminaton; no pain in the breast after being handled. The nipple was of natural size, and not retracted. There was no appearance in the patient of malignant disease. I amputated the breast, and on section it presented a well-marked specimen of sero-cystic disease. No cancer cells were found on microscopic examination. The wound healed, and the patient made a good recovery.

This patient was under my observation for a long period, and never had any return of the disease.

In submitting to the notice of the profession the foregoing cases as examples of large tumours and operations for their removal, I beg to append a few practical remarks on each case. The first is an illustration of a "pendulous" and movable tumour of enormous size, and of many years' growth, occupying the parotidean space and side of the neck. Such tumours are rarely malignant, but after a certain period the dependent part, in consequence of the weight, is liable to ulcerate and bleed, as in the present instance, demanding removal by operation. The elevation of the tumour for some days before operation (as successfully practised by Mr. O'Ferrall of this city) proved to be of much value in the management of this case. It relieved the patient, materially lessened the vascularity of the tumour, and thereby prevented undue loss of blood during the operation. It is further important, in the removal of such large tumours (when the integuments are sound), to preserve ample skin flaps, as already noticed, in order to allow of approximation of the edges of the

wound. If wide elliptical incisions be incautiously made, a large surface will be exposed, which can only heal by tedious granulation. In securing a very large deep-seated artery in the removal of this tumour, acupressure proved very valuable in arresting the hemorrhage, which the ligature did not control. When the magnitude of the tumour in this case and its situation are considered the result of the operation is very gratifying. The patient is now in the enjoyment of good health, with scarcely a trace of deformity, the line of union only being observable on the lower jaw.

Case II. is an example of a very large tumour of five years' growth, situated on the inside of the right thigh, in a young robust countryman, not traceable to injury, almost painless, movable, and even on the surface, on which there were not any vessels ramifying. The patient's only wish for having the tumour removed by operation was the inconvenience caused by its great bulk, which interfered with the free movement of the limb, preventing him from working. The case having been free from any one sign indicative of malignant disease, it was unanimously resolved to relieve the patient by operation. The close approximation of the tumour to the femoral vessels (in Hunter's canal), and the great sciatic nerve posteriorly, required a careful dissection in the removal of the diseased mass. The handle of the knife and my fingers were chiefly used in detaching the tumour, which was enveloped in a fibrous capsule, and when it fell on the floor it presented an appearance not unlike a football. Very little blood was lost during the operation. The wound suppurated, the discharge being sanious and very copious, and healed by granulation.

A section of the tumour presented a cerebriform appearance, with cysts containing clots of blood. The patient returned to the country, and remained in good health for several months. It is but right, however, to add (as I am informed), that in less than a year a swelling appeared in his groin, which finally fungated and bled, and that he died in consequence.

The diagnosis of benign from malignant tumours is not unattended with difficulty, as the history of the foregoing case illustrates. It was the unanimous opinion of the many surgeons who examined the tumour that it belonged to the former class, and was a very promising case for operation. The termination of the case, however, clearly shows that the disease was encephaloid (called Fungus Hematodes by Hey), notwithstanding the absence of any suspicious symptoms. It is worthy of note, that the first case of fungus hematodes

related by the celebrated Hey (see Chap. vi. of his "Surgery") occurred, as in my patient, in a stout young man, twenty-one years of age, and was also situated on the inside of the right thigh. The tumour was two years growing before he was admitted into the Leeds Infirmary, and had attained an enormous size; it was explored by Hey, and was found to contain a very large quantity of substance not unlike coagulated blood, but more resembling the medullary substance of the brain. Mr. Hey performed amputation of the thigh; the stump healed, but in six weeks a secondary tumour arose from the situation of the cicatrix. A second amputation was performed, and the stump healed. The patient went to the country, but was soon attacked with dyspnea, cough, and profuse night sweats, and died in half a year after his discharge from the infirmary, Mr. Hey says from consumption, but manifestly from contamination of the thoracic viscera with the same malignant disease.

Abraham Colles, in his "Surgical Lectures," says:—"The last case I saw of fungus hematodes was in the thigh of a woman. She died, and on examining the abdomen *everything in that cavity was perfectly sound*, but on opening the thorax the lungs were found affected with it extensively." It is remarkable that the disease in this case recorded by Mr. Colles also occurred in the thigh, and subsequently involved the thoracic viscera, and thus, in these two respects, very closely resembled Case II., which I have related.

Cases III. and IV. are examples of large tumours involving the testis, requiring removal by operation, one being fibro-cystic, and the other of strumous origin. The steps of the operation in each case I have already detailed.

Case V. was a specimen of sero-cystic tumour of the breast, which was successfully removed by operation.

I shall now relate a series of interesting cases of tumours which were unsuited for operation, and shall conclude with observations on the characteristic features of malignant, contrasted with benign growths:—

I.—ENCEPHALOID TUMOUR OF LARGE SIZE SITUATED ON THE ABDOMEN OF A GIRL.

II.—ENCEPHALOID TUMOUR, SITUATED ON THE UPPER THIRD OF THE LEFT ARM, IN A YOUNG MAN.

III.—ENCEPHALOID TUMOUR ON THE BACK OF THE WRIST.

IV.—ENCEPHALOID TUMOUR IN THE RIGHT GROIN.
V.—ENCEPHALOID TUMOUR, SITUATED OVER THE MASTOID PROCESS.
VI.—ENCEPHALOID CANCER OF THE LEFT BREAST.
VII.—ENCEPHALOID CANCER OF THE EYE-BALL IN AN INFANT.
VIII.—ENCEPHALOID CANCER OF BOTH TESTICLES.

CASE I.—*Encephaloid Tumour of Large Size situated on the Abdomen of a Girl.*

M. M'E., aged twenty years, a fine robust country girl, residing in the county of Meath, was admitted into the City of Dublin Hospital under my care, on the 26th of November, 1866, with a large tumour on her right side.

History.—She felt a small kernel, *four months* ago, midway between the last rib and the crest of the ilium. It was movable, and not painful. It grew *rapidly*, and at the end of two months became painful, and soon acquired a large size, which induced her to seek for surgical relief, and she accordingly came to Dublin for that purpose. On her admission into the hospital the tumour measured eight inches in the transverse axis, and four inches from above downwards. It was apparently the size of a cocoa nut, of firm feel, and harder at some parts than others; movable and painful when handled; skin not discoloured, and no large vessels were observed on the surface. There was no apparent constitutional disturbance, and no glandular enlargement. The girl, to all appearance, was in the soundest health. She ate heartily, but slept badly. I punctured the tumour with a long exploring needle; a few drops of blood only escaped. In two months (February) the tumour had increased one inch in extent, became red and more painful. Leeches and ice were applied, and tonic mixture containing iodide of potassium was administered, with an anodyne draught at night. In consequence of the deep situation of the tumour and its position on the abdomen, its rapid growth and painful nature, I declined operating. The poor girl was seized with erysipelas of the head and face, which rapidly extended to the larynx and lungs, producing erysipelatous bronchitis of the severest form, which resisted all treatment, and she died on the 22nd March, 1867.

I removed the tumour the day after her death. The abdominal muscles, at the part corresponding to the tumour, were absorbed, and the diseased mass lay almost on the peritoneum. It had no investing capsule, and was supplied by large blood vessels.

On section, the tumour presented a cerebriform appearance, with large clots of blood, and the microscopic examination showed it to be encephaloid cancer. A drawing was taken by Connolly, which I have amongst my collection. The tumour is preserved in the museum of the Royal College of Surgeons.

Case II.—*Encephaloid Tumour, situated on the Upper Third of the Left Arm, in a Young Man.*

J. M'C., aged twenty-five years, son of a farmer residing in Enniskillen, was recommended to come to Dublin to consult me, in March, 1868, by my friend Dr. Bagot, of Enniskillen, under whose care the patient had been, and from whom I received the following history:—

The patient always enjoyed good health until a year ago, when he felt a pain near the insertion of the deltoid muscle of the left arm. The pain was worse in wet weather. In six months the upper part of his arm commenced to enlarge, which the patient described as "a welt around the limb," and so continued increasing in size until six weeks ago, when, in helping to lift a sack of potatoes, he felt something crack in his arm, which caused him much pain. From that time the swelling increased rapidly. About three months ago a small lump appeared at the left sterno-clavicular articulation.

Appearance of Patient and Arm.—Face pale, extremely anxious, and indicative of constitutional distress. Pulse rapid and feeble. The patient sweats profusely at night. He has not any cough. He supports the affected limb in a sling. On removing his clothes (which was obliged to be done very carefully, as the slightest movement of the arm pained him), I observed a large swelling of the upper two thirds of the left arm. The integuments were of a dusky red colour, and large blue veins ramified on the surface. The shoulder-joint was not apparently implicated. The forearm was swollen, and the limb was of great weight. There was also a swelling about the size of an egg at the left sterno-clavicular articulation. On consultation with my colleague, Professor Geoghegan (who agreed with my view of the malignant nature of the case), we decided that operative interference should *not* be resorted to. Amputation at the shoulder-joint, the only other resource, was too serious an alternative, considering the exhausted condition of the patient; and the enlargement at the sterno-clavicular articulation, at once decided the question. This

was also the opinion of the man's own medical attendant, Dr. Bagot. Before the patient returned to the country I had a coloured photograph taken, exhibiting the shoulder and his delicate appearance. The tumour fungated, and bled twice. The hemorrhage was arrested on each occasion by the muriated tincture of iron. About a week before his death he suffered from retention of urine, requiring the use of the catheter. Subsequently paraplegia and brain symptoms set in, and he died on the 27th of May, two months after I saw him, from the exhaustion produced by these desperate complications. It is a curious fact that this case of encephaloid tumour corresponds, in almost every particular, with the last case recorded and illustrated by Hey in his chapter on fungus hematodes. It is still further a strange coincidence that the following case of the disease occurring on the wrist bears a remarkable similarity with Case X. recorded by Hey:—

CASE III.—*Encephaloid Tumour on the Back of the Wrist.*

In June, 1867, I was requested by the late Dr. Asken to visit M. R., aged fifty-eight years, who was suffering from a swelling on the back of her right wrist. She enjoyed good health until a year and a half previously, when she first complained of pain in the part, and in a short time subsequently a small kernel appeared on the wrist, and gradually increased in size. On examination I found a tumour as large as an orange, narrowed at its attachment to the wrist. The integuments were red, and several large veins and pulsatory arteries were observed on the surface. The pain increased in severity. The patient became pale, lost her sleep, and her general health soon suffered. In one month the tumour fungated and bled; bright arterial blood came per saltum, and was arrested by means of the muriated tincture of iron, with compresses of lint and digital pressure, on several occasions. Severe cough attacked her in the winters; she perspired at night, and was much emaciated. The discharge from the wrist was copious, sanious, and fetid. The tumour did not increase in size, but she sank gradually from exhaustion.

CASE IV.—*Encephaloid Tumour in the Right Groin.*

J. D., aged twenty-five years, residing in the county of Sligo, was admitted under my care into the City of Dublin Hospital early in the present year (on the recommendation of my friend, Dr. Wm.

Armstrong, of Collooney), suffering from a tumour in the groin. The patient stated that the disease commenced as a small kernel about a year and a-half previously; the swelling gradually increased in size, and soon attained the size of a small apple. On admission into hospital, the patient presented a pale, sallow, and anxious expression; he had cough and perspirations; rapid pulse; bad appetite, and loss of sleep. He suffered intense burning pain in the affected part. On examination, I observed a tumour in the right groin, about the size and shape of a large orange; the integuments covering the tumour were ulcerated, and discharged a very fetid ichorous fluid. On manipulating the diseased mass, it was found to be firmly fixed over the femoral vessels; the surrounding integument was tense and brawny to the touch; there was no glandular enlargement. The patient fancied that the tumour contained purulent matter, and urgently requested me to relieve him by operation, a request which I was obliged to decline. By my advice he returned to the country. The tumour, as I was informed by Dr. Armstrong, soon became of enormous size, and the patient died in great suffering in one month after his return home. A cast of the tumour was taken before he left the hospital.

Case V.—*Encephaloid Tumour situated over the Mastoid Process.*

J. R., aged nineteen years, daughter of a labourer residing in the country, apparently the picture of health and strength, consulted me early in the year 1867, on account of a small tumour situated over the left mastoid process, causing her annoyance on account of disfigurement. She stated that about five years previously she met with the following strange accident:—A boy was shooting with a bow and arrow; he shot the arrow up into the air; on falling down, it struck her in the ear, which it passed through, and stuck in the mastoid process, and had to be pulled out. She often said, before any swelling appeared in the part, that she felt the spot which was struck becoming very sore. When I first saw her, the tumour was about as large as a walnut, very hard like cartilage, movable, and slightly painful when pressed; there was not any constitutional disturbance. I admitted her into hospital, and removed the tumour, which was found firmly adherent to the surrounding structures. The wound healed, and the patient left the hospital apparently in good health.

In a few weeks she again consulted me, in consequence of constant pain behind her ear, which darted up the back of her head and

down her neck, depriving her of sleep. A fresh tumour soon sprang up in the line of the cicatrix, and quickly attained about the size of a small apple; the integument covering it assumed a red colour, with large ramifying vessels. She was re-admitted to the hospital on the 7th of May, 1868. The tumour spread rapidly, and penetrated into the external ear, discharging a very fetid and bloody fluid; it bled repeatedly; the girl lost her ruddy complexion; she perspired at night, and took but little food. The left cheek became enormously swollen, and facial palsy resulted in consequence of the deep-seated pressure of the diseased mass on the portio-dura nerve. She was ordered full opiates, tonics, wine and beef-tea. She urgently entreated me to try and relieve her by operation, which I was most unwillingly compelled to refuse. She shrieked from pain, and was occasionally delirious. She returned to her home, and died in the greatest agony, worn out by pain and repeated hemorrhages.

Case VI.—*Encephaloid Cancer of the Left Breast.*

C. M., aged fifty years, mother of several children, consulted me in the summer of 1863. A year and a-half previously she felt a kernel in the left arm-pit. The swelling became painful and grew rapidly; large blue veins ramified over its surface, compared by the patient's friends to the branches of a tree. When I saw her the breast presented a most remarkable appearance, being of huge size. She died exhausted by pain and profuse perspirations. The woman who attended her in her last moments said that large quantities of brain-like matter burst through the breast.

Case VII.—*Encephaloid Cancer of the Eye-ball in an Infant at the Breast.*

The child of a countrywoman was brought to the City of Dublin Hospital about three years ago, presenting the following appearance—the eye-ball was protruded from the socket, and the child was very drowsy. Professor Jacob exhibited the case to the pupils, and pronounced it to be hopeless, and consequently unfit for operative interference.

Case VIII.—*Encephaloid Disease of both Testicles.*

A man about twenty-five years of age, a native of the county of Kilkenny, was admitted into the City of Dublin Hospital during the last winter under my care, on the recommendation of my friend,

Dr. Charles G. Lyster, of Kilkenny. The patient had been suffering for some years from enlargement of each testis; latterly the scrotum became of such enormous size and weight that he was unable to go about. On admission he presented a sallow and anemic appearance, and a tumour, about the size of a small orange, was observed under the left angle of the jaw. He died on the next day. I made a *post mortem* examination, assisted by my colleague, Dr. Hewitt, and by Dr. Barker, Curator of the College of Surgeons. On laying open each side of the scrotum by vertical incisions, a large quantity of serous fluid escaped; the diseased mass was of the consistence of cartilage—firm, elastic, and of grey colour. A microscopic examination of the diseased mass was made by Dr. Barker, who found that it presented the characteristics of encephaloid cancer.

This remarkable specimen of cancer of huge dimensions in both testicles is preserved in the Museum of the Royal College of Surgeons; a cast of the scrotum is also to be seen in the Museum. On opening the abdomen, several pounds weight of cancerous masses were found in the mesentery, and both kidneys were involved in the disease.

The cases of malignant tumours which I have now detailed were well-marked examples of encephaloid disease, occurring chiefly in young persons, and situated in various parts of the body. The disease has been differently designated by authors. Hey terms it "fungus hematodes;" Monro, "milt-like tumour;" Burns, "spongoid inflammation;" Paget, "medullary cancer." When situated in the intermuscular spaces (says Paget) "it presents to the touch a peculiar softness, or a deceptive sense of slow fluctuation of some thick fluid, so that even to the most experienced the diagnosis from collections of fluid is often doubtful." The shape of these tumours is round or oval. The materials composing the soft variety of the disease are soft, close, brain-like, and of grey colour, variegated with blood, and, when scraped, yield abundant "cancer juice," of milky or creamy material. The firm medullary cancer (such as existed in the case which I recorded as occurring in the testis) is elastic, tense, compact, and moderately tough. Dr. Kerr defines encephaloid disease "as a morbid condition of the body, evinced by the development of an elastic uneven tumour, or tumours, not painful in the early stage, and becoming so only by implication with surrounding parts, tending to ulceration, and presenting to view a soft and spongy fungus, rapid in its growth,

readily bleeding in vascular textures, and emitting a peculiar serous discharge, of a very fetid odour, more or less coloured with blood."

Among 103 tabulated instances of medullary cancer in external parts (says Paget), the seat of primary disease was in the

Testicle,	in 29	cases.
Bones (most frequently in the femur),	21	,,
Limbs (especially in the intermuscular space),	19	,,
Eye-ball, or orbit,	10	,,
Breast,	7	,,
Walls of the chest or abdomen,	5	,,
Lymphatics,	4	,,
Various other parts,	8	,,
	103	

Medullary cancer very seldom attacks both testicles, either at one time or in succession. When affecting the testicles the swelling has been confounded with hydrocele and cystic disease. Its progress is not always quick, being at one period slow, and at another time rapid in growth. It is one of the most fatal and incurable of diseases, there being no specific remedy, and operative interference is not only questionable, but most unpromising; and although there is generally, in the early stages, no glandular contamination, yet the poison quickly seizes on the viscera—lungs, liver, kidneys, brain, and spinal chord—such contamination being usually indicated by the *sallow*, greenish colour of the skin, clammy sweats, and other symptoms of constitutional disease; and when removed by operation from one part of the body, the complaint is sure to recur rapidly in some other region.

Having met with so many cases of this dread malady in my practice, and consequently feeling much interest in the subject, I considered that the publication of the foregoing details should not be without sufficient interest and practical importance to justify me in submitting them to the notice of the profession.

ART. XI.—*Ulster Medical Society—Inaugural Address of the Session* 1868–1869. Delivered by the President, JAMES CUMING, M.A., M.D.; Professor of Medicine Queen's College, Belfast, &c.

GENTLEMEN—It is a portion of the duty which devolves on me, as President of this Society, to address to you some observations

introductory to our Winter Session. In the first place, permit me to return you thanks for the honour which you have conferred upon me in electing me to this chair. Nothing could be more gratifying to me than such a spontaneous mark of regard coming from my professional brethren, and I had no hesitation in accepting it, knowing that I could rely on your kindness and consideration to aid me in the discharge of duties for which I might otherwise have felt myself inadequate.

Sixty-two years have elapsed since this Society was founded; for we are the legitimate successors of those who originated the Belfast Medical Society in 1806, although its continuity was temporarily interrupted before its re-organization in 1822. In 1862, the Clinical and Pathological was amalgamated with the Medical Society, and the name of Ulster Medical Society adopted. From that period the meetings have been more frequent, and the number of contributions from the members have considerably increased.

We owe much to our predecessors in this Society. They formed and transmitted to us an admirable collection of works, amounting to above five thousand volumes, and including a large number of rare and curious works, which are invaluable to the student of the history of medicine. They have handed down to us also gifts still more precious in the memory of lives honourable to their profession and useful to the community in which they lived. The annals of a town which has produced many distinguished citizens, record no names which deserve a more honourable place than those of Drennan and M'Donnell, who were among the original members of this Society.

In 1806, the medical profession in Belfast numbered nineteen members; the town contained 22,000 inhabitants. Now there are eighty-one practitioners of medicine, and the population of the town probably exceeds 150,000.

The period of the foundation of the Society was one of great intellectual activity in medical science. Jenner's great discovery of vaccination had been first announced eight years before, and was rapidly making its way into public notice. Hunter's famous treatise on the blood and on inflammation, which changed the face of the existing pathology, had been published in 1794. Abernethy was in the meridian of his unequalled reputation. Astley Cooper and Charles Bell were rapidly rising into eminence. Dupuytren had just been appointed to the Hotel Dieu, where his surgical ability was so long unrivalled. Laennec, to whom our art

owes more than probably to any single man of either ancient or modern times, was commencing the investigations which have rendered such imperishable services to the science and practice of medicine. Cuvier was in the zenith of his fame.

The whole method of investigation had also undergone a complete change. Authority was no longer regarded as paramount. The ancients, it is true, had been long dethroned, but, in their stead, more modern masters had arisen, whose teachings had acquired a sway over the minds of physicians almost equalling that exercised by Hippocrates or Galen. Twenty years before the celebrated Cullen related an anecdote, in a lecture which he delivered in the University of Edinburgh, which shows how the authority of Boerhaave was enough to weigh heavily on the freedom of inquiry. "My friend and patron, George Drummond (Provost of Edinburgh), came to me," he said, "requesting seriously that I would avoid differing with Dr. Boerhaave, as he found my conduct in that respect was likely to hurt myself and the university also." He adds, with characteristic prudence, "I promised to be cautious; and upon every occasion I spoke very respectfully of Dr. Boerhaave." Now, with the growth of science, and with the development of new means of investigation, the received opinions were examined with a freedom and minuteness which had been before unusual, and from which results of the highest value soon flowed. Looking back on the state of knowledge at the beginning of the century, we can recognize the vast strides which have been made in every department of medicine.

Now, this very progress, of which we are justly proud, has been made a subject of reproach to the profession of medicine. The pharmacopeias of past generations have been disinterred, and the public made merry with such complex formulæ as the Aqua Coelestis and the Mithridate Andromachi. The opinions, often, it must be admitted, crude and fantastic enough, of the earlier physicians, have been cited as evidence that medicine has been practised without any solid foundation for its precepts and methods. In reality, however, this only proves that the growth of medical science has been accompanied by errors and imperfections, such as are known to have occurred in abundance during the development of other branches of knowledge. The history of astronomy, of chemistry, of geology, afford us multiplied examples of speculations as baseless as those of Paracelsus or Van Helmont. Besides, it must be remembered, that physicians could not be mere *curiosi naturæ*—could not

be content to be simply spectators of phenomena. They found themselves in the presence of formidable maladies, of devastating epidemics, and these they had to meet with the best means at their disposal. In the face of difficulties and danger, often of the most urgent character, sometimes of even appalling magnitude, they had to act with the limited knowledge which they possessed. No doubt many of their principles were erroneous, and much of their practice useless, some even mischievous, but still their knowledge was always vastly in advance of the popular notions of their day.

It is easy to point out mistakes into which they have fallen, just as it is easy to discover defects in the criminal legislation of our ancestors, in their notions of political economy, and in many of their methods of administration; but we know how incomparably better than anarchy is even an imperfect system of government; and in estimating the value to the world of the medical art of earlier times, we must bear in mind the extreme ignorance of medical subjects which was shared by the foremost intellects of their generation.

When the student of the history of medicine is wearied and disheartened by the laborious trifling and the idle discussions of his predecessors, let him turn to the pages of the most eminent contemporary authors, and learn their opinions on kindred subjects, and he will rather wonder at the acuteness and penetration of the earlier physicians. It is only by investigations of this kind that we can calculate the true position which the cultivators of medical science have held in relation to the general progress of human knowledge. It may not, accordingly, be devoid of interest, if I allude to some of the opinions on medical subjects held by several of the foremost thinkers of modern times; selecting only those philosophers who have given serious attention to questions connected with our art, and who have given deliberate expression to their views. Nor need we search for our examples among the followers of Aristotle and the ancients; we can find them in abundance among those most deeply imbued with the new methods.

Probably we could find no more typical representative of modern thought and of the spirit of modern investigation than Bacon. He, more than any man of his generation, had thoroughly broken with antiquity. Bacon had a high idea of physic, and a genuine respect for physicians, although, according to a custom which is not altogether unknown even in the present day, he was fond of lecturing them on their shortcomings, and of giving them a good deal of perfectly well-intentioned advice.

"Medicine," he tells us, "is a science which hath been more professed than laboured, and yet more laboured than advanced." He advises physicians to raise their thoughts above common cures to the subject of prolonging and renewing the life of man, and he brings against them a charge, which has certainly not often been repeated, of prescribing in too simple a manner, and of not combining together a sufficient number and variety of drugs. In addition, however, to his criticisms, he has given an elaborate exposition of his own views as to the means by which life may best be prolonged and renewed. It may be interesting to touch upon some of his opinions on this subject, as an example of how a problem of this kind was dealt with at the beginning of the seventeenth century by one of the foremost intellects of modern times.

Life, according to Bacon, may be effectually prolonged by a combination of ten operations. Of these the first is,[a] "The operation upon the spirits to renew their freshness." This is to be accomplished by various means, of which the principal is the daily use of from three to ten grains of nitre. This remedy refrigerates and condenses the spirits, and he conceives it to have been specially created for that object.

The second operation is the exclusion of the external air from the surface of the body. This is to be effected by closing as completely as possible the pores of the skin. For this purpose astringent baths are to be used, and the surface of the body smeared with oil. Passing over the intermediate operations, we come to the ninth, which is, perhaps, the most curious of the whole. It is entitled, "The operation upon the inteneration of the parts which have become dry, or the softening of the body." It is intended to counteract the drying and hardening of the body, which occurs as age advances; and is to be effected by baths and by anointings.

"In the fable," he informs us, "of the restoration of Pelias to youth, Medea, when she pretended to set to work, proposed to accomplish it by cutting the body of the old man to pieces, and boiling it up in a cauldron with certain drugs. Some boiling may perhaps be required for the purpose, but the cutting to pieces is unnecessary."

The best bath, according to Bacon, is one composed of the warm, fresh blood either of man or of animals; but as this is somewhat

[a] "Historia Vitæ et Mortis." In this and in the following quotations I have used, with a few slight alterations, the version of Headlam, given in the edition of Bacon's works by Spedding, Ellis, and Heath.

loathsome, it may be replaced by other substances of a nutritive character. The Baconian prescription for this unique bath is that it should be composed of the fatter kinds of flesh, such as beef and pork, with oysters, milk, butter, yolks of eggs, wheatmeal, and wine sweetened with sugar or honey. To these should be added salt, saffron, mastic, myrrh, and myrtle-berries.

"The operation will become far more powerful if the proposed bath (which I hold to be the principal thing) be attended by a course and order of four operations. First, before bathing, rub the body and anoint it with oil mixed with some thickening substance, that the power and moistening heat of the bath, rather than the watery part, may enter the body. Next, get into the bath, and remain there about two hours. After the bath cover the body with a plaster of mastic, myrrh, tragacanth, diapalma, and saffron, to keep in the perspiration as much as possible, till the soft matter has by degrees become solid, and keep it on for twenty-four hours or more. Lastly, after taking off the plaster, anoint the body with a mixture of oil, saffron, and salt. Renew the bath with the plaster and unction as before every fifth day, and let the process of softening the body continue for a month."

I think it would be difficult to find anywhere a series of directions more likely to injure the health, or more directly antagonistic to sound notions about the animal economy, than those which we have quoted from the father of modern experimental philosophy.

About the same time that Bacon was announcing this discovery to the world—a discovery which was, in his eyes, so important, that he advanced the treatise containing it to an earlier place in the *Instauratio Magna*, so that no time should be lost in making it public—Harvey, then lecturer on anatomy and surgery at the College of Physicians, was announcing his immortal discovery of the circulation of the blood. Indeed, it is stated that Harvey was physician to Bacon himself, as well as to James I., and that he had formed a low estimate of Bacon's powers, having probably judged of them from the character of his physiological speculations. "He writes philosophy like a Lord Chancellor," Harvey is reported to have said in derision.

Physiological subjects were treated of at much length by another illustrious philosopher, Descartes, who may be regarded as standing in the same relation to modern psychology that Bacon does to modern experimental philosophy. Descartes, who was a man of spotless character, had, like Bacon, studied the means of ensuring longevity,

and had arrived at the conclusion that the surest method of preserving life is not to fear death.[a] He was well acquainted with the circulation of the blood, and his advocacy of Harvey's views contributed powerfully to bring about their acceptance throughout Europe.

He published a treatise on man, which was the fruit of fifteen years of anatomical study and observation, in which he explained his views as to the manner in which the circulation was maintained.

There is, according to Descartes,[b] a non-luminous fire contained in the pores of the substance of the heart which renders it so extremely hot that the blood on entering it becomes at once dilated, and brought to the condition of vapour. In this gaseous state it is sent to the lungs, where it is cooled and restored to the liquid state, and in this condition returned to the left side of the heart. No sooner, however, does it again enter the heart than it is again rarified by the fire contained in that organ, and in this way is driven into the arteries.

Descartes made some considerable discoveries in physics, but it is evident that his fifteen years' study had not enabled him to much advance our knowledge of vital processes.

It is well known that the benevolent mind of Berkeley, one of the most acute of modern metaphysicians, was filled with the notion that in tar water, made by pouring a gallon of cold water upon a quart of tar, he had found a panacea for all the ills of humanity. So profoundly was he impressed with the importance of his favourite remedy, that we find him declaring:[c]—"As the old philosopher cried aloud from the housetop to his fellow-citizens, 'Educate your children:' so, I confess, if I had a situation high enough, and a voice loud enough, I would cry out to all the valetudinarians upon earth, 'Drink tar water.'" He even attributed to this wonderful fluid a subtle influence on the development of the intellect. "Nor is it only useful," he says, "to the bodies of infants, it hath also a good effect on their minds, as those who drink it are observed to be remarkably forward and sprightly. Even the most heavy, lumpish, and unpromising infants appear to be much improved by it. A child there is in my neighbourhood, of fine parts, who at first seemed

[a] Au lieu de trouver le moyen de conserver la vie, j'en ai trouvé une autre plus sûr, c'est celui de ne pas craindre la mort. Œuvres de Descartes par Cousin.—Tome i., p. 112.

[b] L'Homme. Œuvres. Tome iv.

[c] A Letter to T—— P——, Esq., containing some further remarks on the virtues of tar water, and "Farther Thoughts about Tar Water."

stupid and an idiot, but by constant use of tar water grew lively and observing, and is now noted for understanding beyond others of the same age." When we remember that this passage was published in 1752, when Cullen and William Hunter were teaching medicine and anatomy, we shall have no reason to doubt that, on their own ground, the physicians of the day were more than a match for the metaphysicians.

Coming to more modern times, we may select, as a final instance, the greatest speculative philosopher of Germany, the celebrated Kant. Kant had the singular misfortune to be impartially and eminently wrong, both in what he believed about medicine and in what he disbelieved. He was an enthusiastic admirer of the absurd Brunonian system, which hardly survived its birth, and of the puerilities of Beddoes; and he was strongly opposed to what has proved an inestimable blessing to the human race—the practice of vaccination.

It would not be amiss, when we are lectured by some of our contemporaries on the defects of our art, to remind them of the errors into which men greater than they have fallen when they ventured into our domain, and to counsel them to learn humility from the example of Bacon, of Descartes, of Berkeley, and of Kant.

I have adduced these instances, to which it would be easy to add many others, not with the idle notion of depreciating the labours of the great philosophers to whom I have alluded, but to show the inherent difficulties of the study of medicine, the danger of regarding the facts or generalizations derived from other sciences as adequate to its elucidation, and the absolute necessity for a minute and accurate as well as comprehensive knowledge of the phenomena of disease before venturing to even speculate upon its theory, much less to meddle with its practice.

It was acutely remarked by Bichât that pathology, the science of disease, has no exact analogue among the physical sciences. Physiology bears the same relation to living bodies that astronomy, mechanics, and the other branches of natural philosophy do to inert matter. But there is no pathology of any of the physical sciences. We cannot suppose gravitation to be variable in its operations, or chemical affinity as liable to diseased action. Nor can we conceive these forces as susceptible of being influenced by medicaments. Accordingly the processes of disease must be studied by and for themselves, and they, as well as the modes of modifying them, and of restoring healthy action, must be made the subject

of special investigation, which is to be conducted according to the general principles which govern all scientific research, but which must not be dominated by ideas derived from any other branch of inquiry.

Even as regards the impression produced on the mind, there is a marked difference between the contemplation of vital phenomena and that of the operation of the physical forces. The study of life and of its manifestations conveys the idea of tumultuous action and energy, of effort sometimes baffled, sometimes victorious, of a strife and turbulence, so to speak, compared with which the majestic regularity and unvarying precision of the physical forces seem the type of serene and immutable power.

When chemistry and physics, and anatomy and psychology, have said their last word, we are still only on the threshold of medicine, and it is from a neglect of this important truth that so many mistakes have been committed. There is no doubt that many of the ablest physicians have proposed theories which have not borne the test of subsequent investigation, but there was this important peculiarity with regard to most of these theories, that the experience and sagacity which their authors had acquired by watching the working of diseases and of remedies saved them from falling into such disastrous errors of practice as those which we have noticed. It has been stated with regard to Sydenham that while his system was very often bad, his practice was generally good. Probably at the present day our practice is in advance of our theory. We all allow ourselves a certain latitude in speculation, but we hold fast by the practical facts which have been gained to us by centuries of observation, and which are none the less valuable because they are often purely empirical. I believe no man living can fully explain why and how opium acts, and yet every physician knows its effect, and how to get from it the maximum effect with the minimum of risk in cases where he considers it to be useful.

Now when we find that the leaders of thought and of progress in their generation fell into the egregious blunders to which we have adverted, we can form some faint conception of the chaotic condition in which the notions of the uneducated mass of the people must have been with regard to medical subjects. Even now, with the vastly greater facilities for the acquisition of knowledge which the spread of education has afforded, we are all aware of the great number of popular errors which we have occasionally to combat, of

the vigour and intensity of popular prejudices, and, at the same time, of how easily a large portion of the world can be dazzled by any specious or confident pretender. When we reflect on homeopathy and hydropathy; when we think of the hundred delusions not more baseless, although generally infinitely more mischievous, which have flourished and been forgotten, we see with what flimsy theories large numbers of the community can be satisfied. And when we think of the cancer-curers, and of the consumption-curers of the countless knaves who prey upon other forms of human infirmity, we can form some notion of the enormous value of our profession to the world, if it possessed merely the negative merit of protecting our fellow-creatures from these cruel, ignorant, and rapacious charlatans.

I should be sorry, however, to be supposed to throw any imputation on the motives of many of those who are incredulous regarding the value of the art of medicine. No doubt in numerous instances this incredulity is the result of genuine conviction, in others the fruit of an imagination too active and soaring to be trammelled by mere facts. Many have "been driven, by strong benevolence of soul," far beyond the regions of common sense and of daily experience. Not very many years have elapsed since I entered upon the study of medicine, and yet during that period, hardly exceeding three lustres, I have witnessed the rise and fall of several all but infallible remedies for various diseases. I have read several publications, before which, in the opinion of their authors, the whole structure of medicine was destined to fall as speedily as the walls of Jericho did before the trumpets of Joshua. I have been solemnly advised, nay warned, to devote my attention to as many systems of cure as would have given me full occupation in their investigation, could I have looked forward to years as numerous as those of "the many-wintered crow," or, as might be hoped for from Bacon's bath, were it as efficacious in producing longevity as it is undeniably disgusting.

The fact is, that while with our present knowledge no great generalization is as yet possible, we have ample scope for the most far-reaching and penetrating intellect in the work which lies at our hand.

A distinguished writer has attributed to the study of medical science an important influence in the development and cultivation of one of the most remarkable intellects of modern times. "No science could have been chosen more happily," says Dugald Stewart,

"to prepare such a mind as that of Locke for the prosecution of those speculations which have immortalized his name; the complicated and fugitive, and often equivocal phenomena of disease requiring in the observer a far greater portion of discriminating sagacity than those of physics, properly so called; resembling, in this respect, much more nearly, the phenomena about which metaphysics, ethics, and politics are conversant."[a]

Even to ascertain what the disease is under which his patient labours, a physician must have an exact knowledge of healthy structure and function, so as to recognize the character and extent of the deviations from them; he must be familiar with the vast range of diseases which have been known to occur, so as to be aware of what is possible; he must possess delicate and experienced tact to be able to ascertain and elicit the symptoms which are present; and as the facts upon which his conclusions must be based are often incomplete, sometimes apparently contradictory, occasionally even wilfully withheld from him, he must possess a power of nice discrimination, and a thoroughly trained logical faculty, to be able to arrive at a correct conclusion as to what the disease is most likely to be, and how far he is warranted in acting on the probability so arrived at. It is essential, also, that his knowledge should be so thorough as to be always and in every emergency at once available for use, a requirement which necessitates such a familiarity with both principles and details as is only to be gained by long and earnest study.

All of us have had experience of the immense amount of time and patience necessary to gain a proper knowledge of human anatomy. We know the wide field embraced by physiology and pathology, by medicine and surgery, and what labour it requires to traverse it with anything approaching completeness. We know the amount of time and attention which it is necessary to devote to the acquisition in the wards of an hospital of some practical familiarity with the daily duties of the life of a medical practitioner; and, reflecting on this, we see how scanty, in reality, is the period allotted to professional studies, and how impossible it is to curtail it by giving up any considerable portion of it to other than professional subjects. We see, too, how essential it is that every one who attempts to master this vast department of human knowledge should come to its study with his reasoning

[a] Dissertation of the Progress of Philosophy since the Revival of Letters.

powers, as far as possible, already disciplined, with his faculties of attention, of abstraction, of comparison, and the like, already exercised and sharpened by a sound and well-directed preliminary education. To such students the acquisition of knowledge is easy and delightful, and from such students we may fairly expect additions hereafter to our knowledge of sterling and solid value.

Within the last few years, and in a great degree, it must be owned, in consequence of the action of the General Council of Medical Education, a considerable advance has been made towards the establishment of a better and more comprehensive standard of general and professional education. Few questions are of greater public importance than this; for everything which tends to increase the efficiency of the members of the medical profession has a direct and obvious bearing on the well-being of the community in which they are to exercise their art. Even, however, among some of the ablest and most enlightened advocates of improvements in our present system, there are signs of a tendency to attach undue importance to those branches of learning which are high in public estimation, and of which the cultivation may be regarded as favourable to the maintenance and advancement of the prestige and the social position of the profession. I cannot, for example, attribute the vigorous efforts which have been made to establish the Greek language as an essential part of the preliminary education of medical students altogether to a conviction of its importance in promoting the ultimate ends of medical education. A superficial acquaintance with Greek is, it would seem to me, comparatively worthless; and any large or thorough knowledge of the masterpieces of its poetry, philosophy, or history, is, as regards the medical student, practically unattainable—indeed, is practically unattained by the immense majority of those who have received what is ordinarily understood to be a liberal education. The arguments which are employed by the advocates of Greek seem to take for granted that the ordinary student will be enabled to at least read the great works of its literature with ease, and that he will derive a high kind of gratification, as well as of æsthetic culture, from the exercise of this power. In addition to this, he is expected to become better acquainted with the principles of universal grammar and with philology and to obtain a more complete mastery over the resources of his own language; and these advantages, it is said, will be cheaply purchased by the admittedly irksome and protracted exertions necessary to master the elements of the language.

I am quite willing to acknowledge that a large and thorough knowledge of classical languages and literature is an indispensable element in the highest culture; and if the circumstances of the country or the position of the profession warranted us in demanding this knowledge from every aspirant to the rank of a medical student, I should welcome any effort in the direction of a result so desirable. But I do not think that the preparation for an ordinary matriculation examination has any considerable effect in this direction. The beauty and perfection of form of the ancient masterpieces can only be felt when the language in which they are contained has become so familiar to us that no effort on our part is necessary to enable us to understand the meaning of the words, and when we have attained to some comprehension of ancient modes of thought and feeling. That this is the result of a partial study of Greek is not likely to be asserted by any one who is familiar with the facts. I think that a more thorough knowledge of Latin, if, in addition the student were required to be acquainted with a modern language, would suffice amply for the grammatical training, and for the æsthetic culture, which are, no doubt, indispensable parts of high education.

It would not be difficult to show to any one, whose mind is not biased by the traditional reverence for classical learning which has imbued so profoundly most of our theories of education, that the study either of the French or of the German language is, as a means of educating the critical faculties, not very much inferior to that of Greek; while as an end—as conferring the power of completely and readily understanding the works written in either of these two modern languages—compared with a similar mastery of the ancient tongue, the balance of advantage is so vastly against the Greek as to preclude the possibility of any serious comparison. In fact, with the exception of its value in enabling the student to more readily understand scientific terminology, Greek may be regarded as an intellectual luxury; and it may be worth observing that in medicine we have really no scientific terminology, in the proper sense of the words. Our names of diseases do not express their systematic relations, as the nomenclature of chemistry does with respect to the substances with which that science is concerned, and, indeed, in the present state of our knowledge, it is highly desirable that we should not attempt the formation of a systematic terminology, so that on this ground also Greek cannot be regarded as necessary.

Again, a more extended and more fruitful use might be made of

the valuable means of training which the natural and experimental sciences afford. The study of these sciences tends to develop and strengthen precisely those powers and faculties which are constantly called into requisition during the exigencies of professional life. Exact observation of facts, careful reasoning, and rigorous scientific method are derived almost of necessity from a sound and judicious training in these sciences. It is essential, however, to bear constantly in mind, in the consideration of this important question, that whatever be the means employed for the purpose, the education of the faculties, in the true and limited sense of the word education, is the important thing. Without this even considerable erudition or extensive knowledge of the facts of natural science will be of little use to the student; nay, may even overburden his undeveloped intellect—

> "Like Saul's plate armour on the shepherd boy,
> Encumbering and not arming him."

With regard to the question of the granting of medical degrees, the Council has done good service. It is probable, as has been observed by Adam Smith, that no examination ever has been, or ever can be, devised, which will give an absolute security to the public that he who has passed it is thoroughly competent to practise medicine. That degrees and diplomas have sometimes been conferred on men who were neither wise nor judicious is probably no secret either in the profession or out of it. But every effort should be made in the interest of justice and of humanity, that as far as is possible a degree should be a *bonâ fide* evidence at least of the acquirements of its possessor. It is quite clear, accordingly, that no competition should be permitted between the corporations who possess the privilege of granting them. No body should be allowed to attract candidates for its qualification by a less extended curriculum, or a less strict and searching examination than those of its rivals. This would at once and finally extinguish the artificial distinction between medical and surgical qualification, which has been a fertile source of evil to the profession.

And now, gentlemen, laying aside the consideration of questions which are specially interesting to ourselves, and regarding the wider one of the position of medicine throughout the world, I think we have ample grounds for congratulation and hope. Never have inquiries and investigations been prosecuted before with such wealth of scientific appliances, or over so many countries, or by

men of such different culture, or under circumstances of so great diversity. Never were intellects of a higher kind engaged in the study of our art. And, what is still more hopeful, we find that with much observation there is little theorizing. Men are now content to proceed upon the solid ground of experience and fact, anxious rather to

"Lay great bases for eternity,"

than to erect unsubstantial and unenduring fabrics of speculation.

Looking forward to the future of our art, I think of it as going onward in sedulous, intelligent, honest investigation of the myriad varieties of the action and suffering of the human body; in the unceasing search after the means by which disease may be lightened or removed, proceeding slowly, it may be, but always on the solid basis of patient, unwearied observation, unhasting, but also unresting.

I think of it, not as quickened by higher motives or directed towards nobler aims than now, for humanity and benevolence are of the essence of the profession of medicine; but as ever gaining truer conceptions of the processes of health and of disease, and deeper insight into their nature; as laying broad and deep the foundations of a structure of knowledge from which, in "an ampler ether, a diviner air," wider views of life and of its manifestations may be obtained.

I think of the conditions of health becoming defined; of the seminal principles of disease becoming recognized; of some medical Newton of the future unveiling for us the mystery of vitality; and, finally, of the noblest and crowning triumph of our art, in the discovery of better, surer, and wider means of preventing, mitigating, or curing disease.

"So from the root
Springs lighter the green stalk, from thence the leaves
More aery; last, the bright consummate flower."

ART. XII.—*On Uterine Hydatidiform Disease, or Cystic Degeneration of the Ovum.* By THOMAS MORE MADDEN, M.R.I.A., L.K. & Q.C.P.I., M.R.C.S. Eng., Assistant Physician Rotundo Hospital.

THE subject of the following communication is one which presents some of the most obscure points connected with obstetric science,

the disease in question being comparatively rare, and very little being as yet ascertained as to its pathology, or the causes of its occurrence. Sir James Simpson mentions only one case of hydatid ovum in his "Obstetric Memoirs." Drs. Hardy and M'Clintock, in their "Report of the Practice of the Rotundo Hospital" during a term of three years, in which an account is given of 6,634 cases of parturition, speak of only one case of uterine hydatids. Dr. Meadows, in his "Manual of Midwifery," tells us that he has met with but two cases of this kind. Drs. Sinclair and Johnston, in their "Practical Midwifery, comprising an Account of 13,748 Deliveries in the Dublin Lying-in Hospital," give the particulars of only four cases of hydatid delivery, which took place in the hospital during the mastership of the late Dr. Shekleton. And in his treatise on "Diseases of Women," Dr. M'Clintock, after an experience of ten years in connexion with the Dublin Lying-in Hospital, tells us that he has met but nine cases of this nature. Therefore, as it seems to me the duty of every practitioner who encounters any case not commonly witnessed to place the facts he may observe on record, I now submit the particulars of two cases of uterine hydatidiform disease, one of which came under my notice several years ago, and the other of which occurred very recently, and I have added some observations which have suggested themselves to me, and a sketch of the literature of this very obscure subject, which I venture to hope may be of interest to those who devote themselves to this branch of medical science.

Case I.—On the 4th of October, 1860, I was requested to visit Mrs. K., who, I was informed, was threatened with a miscarriage. She was twenty-two years of age, and had previously given birth to two children at the full time. She stated that she believed herself to be five months pregnant, and her abdomen presented the ordinary appearance of a woman about that time advanced in pregnancy. For three days before I saw her there had been a considerable amount of clotted blood discharged from the uterus, and the midwife assured me that she had distinctly felt the placenta presenting. On examination, however, I found the os small and rigid, and discovered the supposed placenta to be nothing but a rather firm clot. Her pulse was extremely weak and thready, and I gave her an opiate draught and employed cold applications to the vulva. In about two hours from this time a larger clot than had yet appeared was discharged, together with some fluid blood, and was followed

by a large mass of hydatids and fresh clots, which filled a large basin. These hydatids were of the usual character of such formations, though some of them were larger than those generally met with, consisting of pedunculated spheroidal cysts, varying in size from a currant to a plum. As the hydatidiform mass was very slowly expelled, a dose of ergot was administered, and the discharge continued at intervals for upwards of an hour. When it had ceased, and the uterus, stimulated by pressure with a cold hand, had firmly contracted, I bound her up in the usual manner. She complained greatly of after pains, but, with this exception, her recovery presented nothing worthy of notice.

Case II.—Eliza Fox, aged fifty-three, married, the mother of fourteen children, was admitted into the Rotundo Lying-in Hospital, September 30th, 1868, suffering from hemorrhage. The history of her case, which I took down from herself, is as follows:—She was last pregnant eight years ago, and her menses have not yet ceased. For the past twelve months there had been a constant red discharge from the vagina, and at the same time her abdomen had been increasing in size; she did not, however, believe herself pregnant, owing to her time of life. During the same period occasional gushes of red watery fluid from the uterus were observed. On the 17th of September a smart attack of hemorrhage occurred, and three days later regular labour pains, as she says, set in, accompanied by hemorrhage—these occurred at long intervals; and on the 27th a large mass, which appears from her description to have consisted of hydatids, was expelled from the uterus. On the 29th the hemorrhage and pains returned, and after two hours of strong labour pains a small fetus, as she says, "about as long as her hand," was expelled—this appears to have been blighted at an early period of pregnancy, and was followed in due course by the placenta. Some hydatids now also came away. Dr. A. Speedy was then sent for, and had her removed into this hospital. As the discharge of blood still continued, half an hour after her admission, Dr. Beatty removed a mass of hydatids from the uterus, after which the hemorrhage did not again return. These hydatids are thus described by the pupil on duty in the case book:—"She expelled several masses, varying in size from a pea to a grape; some round, others oval; the small ones rather transparent, the large ones of a straw colour; some were separate, others attached to a solid mass; evidently hydatids of the third order." The specimens

I have preserved of these hydatids are well described in the foregoing extract from the ward book. The patient made a good recovery, and I discharged her on the 8th of October, having kept her only eight days in the hospital.

What the nature is of the pathological change which leads to the formation of these abnormal growths in the uterine cavity is a matter on which the most conflicting opinions have prevailed, and as the subject is one of some interest, practically as well as theoretically, I have now collected together the opinions of the most eminent writers, ancient and modern, on this question. The numerous theories by which the formation of inter-uterine hydatidiform masses have been accounted for may all be included in one or other of the following hypotheses, the first and most recent of which is that hydatid moles are necessarily connected with impregnation, and are the result of embryonic death and morbid growth of some portion of the ovum. The second is that hydatid moles are not connected with pregnancy at all, but are simply the result of diseased ovarian action. The last, and, perhaps, the oldest of the theories referred to, is that these vesicular uterine masses are similar in their structure and development to the true hydatids found in other parts of the body. A full and interesting account of the opinions of the ancient writers on midwifery on this subject may be found in Crooke's *Μικροεμοτραφία*, published in 1651. And as that work is not very commonly met with at the present day, I regret that the space at my disposal only suffices for a few lines of quotation from this very curious volume. "To perfect conception," says our author, "there is further required an *εὐκρασία* or laudable temper of the womb: for those whose wombs are either hot or cold, or moist or dry above measure, does not conceive, as saith Hippocrates. If, therefore, any of these things be wanting we cannot hope for a lawful conception, but either there will be none at all, or a depraved and vicious, such as is of the moon calf or *molla*. For Nature rather endeavoureth an imperfect and depraved conception than none at all, because she is greedy of propagation, and diligent to maintain the perpetuity of the kind of things: whereupon, rather than she will do nothing, she will endeavour anything how imperfect soever."[a] One of the most interesting "Exercitations," in "Harvey's Treatise on Genera-

[a] *Μικροεμοτραφία*. A Description of the Body of Man, together with the Controversies and Figures thereunto belonging. By Helkiah Crooke, Doctor in Physicke, Physitian to His Majesty. Folio. London: 1651, p. 219.

tion," is that in which mention is made of this subject. Harvey observed that these substances are usually expelled in the early stage of the supposed pregnancy, and his ideas on the point appear to coincide with those of Hippocrates generally.

Hippocrates, describing the ill effects of drinking marsh water, in the treatise "On Airs, Waters, and Places," mentions amongst them the following:—"And further, the woman appears to be with child, and when the period of parturition arrives the fulness of the belly disappears, and this happens from dropsy of the uterus." Dr. Adams, in his learned commentary on the works of Hippocrates, referring to the foregoing passage, says:—It may appear singular that hydatids of the womb should be peculiarly prevalent in the case of women that drink unwholesome water from marshes, and yet our author's observation is confirmed by a modern authority, as quoted by Coray:—"Il a été également prouvé par les observations des modernes, que les fausses grossesses produites par les hydatids sont très-communes dans les pays marécageux ou la plupart des habitans ont une constitution lâche, propre à l'affection scorbutique qui y est presque endémique, qu'elles se terminent plus ou moins tard par l'excretion de ces hydatids."[b]

Most modern writers on midwifery assert that these uterine hydatids are invariably dependant on impregnation. The late Dr. Montgomery, in his work on the "Signs of Pregnancy," says:—"My own belief then is that uterine hydatids do not occur except after sexual intercourse, and as a consequence of impregnation; never having met or heard of a case in which their presence was not accompanied or preceded by the usual symptoms of pregnancy. Still it must be confessed that our knowledge on this point is by no means sufficiently precise, nor our collection of facts sufficiently extended to warrant us in pronouncing positively on the question, or asserting decidedly in a case of suspicion that a woman was pregnant merely because she discharged hydatids from the uterus."[c] Dr. M'Clintock bears still stronger testimony to the same effect. He says:—"In every example of the disease which has fallen within my own observation, or came within the sphere of my knowledge, the history and symptoms, and the anatomical appearance of the ejected mass all justified the conclusion that the disease supervened upon

[a] Harvey "On Generation." Exercitation the 56th, p. 420. Edition of 1653.

[b] Hippocrates Translated, with Annotations. By Francis Adams, LL.D. Sydenham Society edition, Vol. i., p. 197. London: 1849.

[c] Dr. Montgomery "On the Signs of Pregnancy," p. 264. 2nd edition.

impregnation."[a] Lamzweerde asserts that "Virgines non possunt concipere vel generare molam sine copula maris." The same author also declares that "Vidua non potest concipere molam virtute mariti defuncti relicta in utero, sine novo maris auxilio"[b] Madame Bovin states that these moles are degenerated ova, and that they are always the result of impregnation.[c] Dr. Campbell, in his "Midwifery," says that, "except in one case related to him by one of his pupils, the author never heard of a case in which hydatids of the uterus were produced by an unmarried female, but always by persons in constant intercourse with their husbands."[d]

Mr. Paget, in his "Lectures on Surgical Pathology," has given a very clear account of the pathology of this disease, which he terms "cystic disease of the chorion."[e] In his views on this subject Mr. Paget coincides with Dr. Mettenheimer, who holds that these cysts are merely enlarged "chorion villi deviating from their cell form, and increasing disproportionately in size out of each of which a new vegetation of villi sprouts of the same structure, with the proper villi of the chorion."[f] Dr. M'Clintock, whose experience of this disease is, I believe, larger than that of any other writer, concurs with Mr. Paget's opinion, and adopts his phraseology on this topic:—"As," he thinks, "this most truly expresses the pathological nature of the complaint."[g] Dr. Carl Weld says:—"These serous degenerations of the villi are still more remarkable when they occur at an earlier stage of the formation of the chorion, in which case they are generally connected with a complete dissolution of the fetus. . . . We regard," he adds, "these as immature, newly developed elements of connective tissue."[h]

Dr. Graily Hewitt says:—"The little vesicular bodies expelled singly from the uterus, or in series like beads, really result from

[a] Dr. M'Clintock—"Clinical Memoirs on the Diseases of Women," p. 397. Dublin: 1863.

[b] Lamzweerde—"Historia Naturalis Molarum Uteri," pp. 171-176. 1685.

[c] Madame Bovin—"Traité Pratique des Maladies de l'Uterus, &c.," Tome i., pp. 288-293. Paris, 1833.

[d] Dr. Campbell—"Introduction to the Study of Midwifery," p. 450. Edinburgh: 1833.

[e] Mr. Paget—"Lectures on Surgical Pathology," pp. 417-420. London: 1863.

[f] Dr. Mettenheimer—"On Cystic Disease of the Ovum." In Muller's Archiv. H. 5, p. 417.

[g] Dr. M'Clintock—"Clinical Memoirs on Diseases of Women," pp. 393-410. Dublin: 1863.

[h] Dr. Carl Weld—"Pathological Histology," p. 174. London: 1855.

certain alterations in the chorion villi, and are always the result of conception." Dr. Hewitt also maintains that in such cases the fetus dies first, and that then the chorion villi becoming altered, and not merely arrested in their development, the result is the formation of the so-called hydatidiform or vesicular mole.[a] Dr. Koeberle sustains this theory in a paper published about the same time as Dr. Graily Hewitt's memoir. Dr. Koeberle treats of the disease under the term of "internal abortion of the fetus," by which he means "the death of the fetus in utero at any period of pregnancy while its coverings continue to grow, and the fetus itself degenerates, or is mummified."[b] Dr. Braxton Hicks considers that the formation of hydatidiform masses in the uterus depends on a continuation of the growth of the villi after the normal type, and is not due to any superadded impulse, as is implied in the term "proliferous cyst."[c] Dr. Churchill says:—"There may be a form of hydatids not the result of impregnation, yet in the majority of cases it is probable that moles, properly so called, whether blighted conceptions, fleshy moles, or hydatids, are truly consequent upon sexual intercourse and impregnation; but in the practical application of this judgment to forensic medicine, we must not forget that this does not imply criminality or impropriety in every case; as, for instance, a widow may have conceived during the lifetime of her husband, and the death of the embryo not having been followed by the expulsion of the ovum, it may remain in utero until after the death of the husband, and then be discharged, without the slightest suspicion attaching itself to her conduct."[d]

A theory has been put forward by Dr. Graily Hewitt,[e] and sustained by Dr. J. Byrne[f] and other recent writers, to the effect that in cases of hydatidiform disease of the ovum, "If the death of the fetus be postponed until the formation of the fetal placenta has commenced, the hydatidiform degeneration will be necessarily limited to that part of the chorion which is in contact with the decidua serotina." Now this conjecture is, in fact, a revival of the old opinion that uterine hydatids are formed in the placental

[a] Dr. Graily Hewitt—On Diseases of Women, p. 74. London: 1863. And also in Obstetrical Transactions, Vol. i., p. 249. London: 1859.

[b] Dr. Koeberle—In Presse Med., 1858, p. 45. And Sydenham Soc. Year Book, 1859, p. 353.

[c] Dr. Braxton Hicks in Guy's Hospital Reports, 1865.

[d] Dr. Churchill "On Diseases of Women," page 284. Dublin, 1864.

[e] Dr. Graily Hewitt in Transactions of London Obstetrical Society.

[f] Dr. J. Byrne in Dublin Quarterly Journal of Medical Science, 1865, p. 464.

substance. Thus Ruysch, the celebrated Dutch anatomist of the 17th century, speaks of uterine hydatids originating in the placental structure:—Hæc recenta moles placentæ, penitus amittens genuinam suam indolem, quia est vasorum sanguineorum contextus, integro suo corpore mutatur in congeriem hydatidum.[a] Dr. Denman says:—"These (hydatids) have been supposed to proceed from coagula of blood, or portions of the placenta remaining in the uterus: and the opinion is generally true; but there is sometimes reason for thinking that they are an original production of the uterus, independent of such accidental circumstances, and sometimes the precursors of organic disease in that part."[b]

In Dr. Wm. Hunter's lectures on the gravid uterus, delivered in 1765, and cited by Dr. Davis, the following mention is made of hydatid disease of the uterus:—"I have seen a placenta in the fourth month all degenerating into hydatids. There are two kinds, one where the little hydatids are distinct and detached, the other where they hang together in things like bunches of currants. This last sort is the most common in the uterus. They are most common in the placenta, but they may be in other parts of the uterus. Sometimes there are vast heaps of them in the cavity of the uterus, and no remains of the placenta. I ventured, from seeing hydatids coming away from the uterus, to say that the woman was with child, because they most commonly attended the placenta. I have seen pailfuls of hydatids come away from the uterus with pains, the placenta and fetus being thus converted. They are generally the accompaniments, as also probably the results, of blighted and other diseased forms of eventually unproductive gestation."[c]

Hydatidiform disease of the placenta is spoken of by Sir Edward Home, who regards it as a not uncommon cause of miscarriage—"For," he says, "when it takes place the natural healthy actions for the support of the fetus are so much impeded that its growth is arrested. This evidently happened in a case published, with an engraving of the placenta and fetus, by Dr. Denman; and when the patient does not early miscarry the fetus disappears, and in all the instances in which miscarriage has taken place in a more

[a] Ruysch (Frederici)—Thesaurus Anatomicus. Pars. Secundus, Tom. Primus, p. 47. Amstelodami: 1710.

[b] Denman—"Introduction to the Practice of Midwifery," Vol. i., p. 117. London: 1805.

[c] Dr. Davis—"Obstetric Medicine," p. 676.

advanced stage of pregnancy, I believe no fetus has been found."[a]

Dr. Burns says:—"In a great majority of cases hydatids are found in the placenta of a blighted ovum, and accordingly the symptoms at first are exactly the same with those of pregnancy."[b] Dr. Blundell says:—"Hydatids sometimes form in the ovum and (if I may be allowed the expression) devour it; sometimes a part only being converted into their substance, so that they lie embedded and concealed in the placentar structure; sometimes the whole, or with the exception of a few vestiges being consumed, so that in place of the ovum nothing but these animalcules remains in the uterus."[c]

To explain the production of uterine hydatids by the assertion that they are merely enlargements or distentions of serous or mucous follicles, is, I fear, but to explain *ignotum per ignotius*, leaving the matter in its original obscurity. Under conditions of healthy nutrition we know that the animal fluids tend to resolve themselves into organized structures, but under conditions of unhealthy nutrition or assimilation the property inherent in the nutritive fluids, by which they tend to form organized structures analogous in character to the part in which they are deposited, is suspended, and, the principle of organization still existing, the result is the formation of heterologous structures, that is, of tissues essentially different from those which would be formed in the same part by healthy vital action. Thus structures are formed either of a malignant character, such as cancer or tubercle, or of a low organization, as in the case of the hydatidiform masses which are occasionally formed in the uterus.

The theory that hydatidiform moles of the uterus are formed by the degeneration of transformed chorion villi of a blighted fetus, although it may be applicable to many cases, is, I think, clearly disproved (as a universal law) by the numerous cases on record in which uterine hydatids were expelled by unmarried women whose chastity was unimpeachable. I therefore think it by no means improbable that some of these instances might be accounted for on the supposition that a morbid action or monstrous growth may occur

[a] Home—"In Transactions of a Society for Improving Medical and Chirurgical Knowledge," Vol. ii., p. 300.

[b] Burns—"Principles of Midwifery," p. 135, 10th edition. London : 1843.

[c] Blundell's "Principles and Practice of Obstetric Medicine." Edited by Drs. Lee and Rogers, p. 250.

in one of the Graafian vesicles, which modern physiology has shown are discharged from the ovaries at each menstrual period, and that this hydatidiform disease of the unimpregnated ovum may be in some way connected with ovarian disease.

Dr. Samuel Ashwell, in his treatise "On the Diseases of Women," speaking of the vesicular mole of the uterus, says:—"I have seen, at least, one example where they were the result of diseased action of the uterine lining membrane, independently of sexual intercourse. The patient was the widow of a surgeon, and of undoubted reputation. Her husband had been dead two years and a half, when the abdomen began to enlarge. She had nausea, but no vomiting, from which she had always suffered in her pregnancies. The increase of size was very rapid, and at three months and a half from the first stoppages of menstruation, the bulk of the uterus had reached that of a seven months' pregnancy. The abdominal tumour was flaccid, and the os closed. At the fourth month after more than ordinary exertion there was a gush of blood from the vagina, followed by the immediate escape of a considerable quantity of vesicular hydatids. The recovery was good. Iron was afterwards given. She was sent to the sea-side, and now, at the expiration of several years, there has been no return of the malady. Mr. Douglas Fox, Surgeon to the Derbyshire Infirmary, gave me the particulars of a case in which a large mass of vesicular hydatids was expelled from the uterus of a maiden lady, where the hymen was unruptured, and of whose chastity there could not be a suspicion."[a]

The following very suggestive case is recorded by Dr. Graily Hewitt:—"A young unmarried woman died with excessive enlargement of the abdomen, and on examination it proved the peritoneal cavity was beset with true hydatid cysts, which had originated primarily in the liver. These hydatid cysts were found attached to the uterus anteriorly as well as posteriorly, to the ovaries, to the walls of the pelvis—in fact, few portions of the peritoneal surface were without them. Had life been prolonged, the bursting of some of these cysts into the uterus, or into the vagina, was almost inevitable, and then the phenomena would have been presented of a young unmarried woman discharging true hydatids from the generative passages."

Dr. William Ashley, in his valuable essay on this subject,

[a] A Practical Treatise on the Diseases Peculiar to Women. By Samuel Ashwell, M.D., p. 528. London: 1844.

speaking of the pathogeny of the uterine hydatid mole, says:—"In a case that came under my care there was strong presumptive evidence that it had established itself on the 'debris' of retained placenta; symptoms of hydatid formation appeared a few weeks after delivery, and under circumstances which precluded the possibility of a subsequent impregnation." [a] The same author also cites another case of vesicular mole of the uterus, which appears to have been in no way connected with pregnancy, related by Dr. Knoch, of Heilgenbeil:—"A healthy, strong woman, thirty-two years of age, had been married nine years, and had borne four children without difficulty. At this time she was living apart from her husband, so that according to the declaration of both there could have been no intercourse. The menstrual function ceased after the weaning of the last child, and the patient observed that her abdomen became enlarged, as if she were again pregnant. After three months' suffering, during which she was continually upbraided by her husband in consequence of her condition, pains came on, and hydatids about the size of two fists were extruded. They were collected in a grape-like cluster, and the cysts varied in size from a hemp-seed to that of a walnut." [b]

In the *Annales D'Hygiene* for April, 1867, the following case is related by Dr. Fischer:—A young woman, pluripara, delivered herself in a wood, threw the infant—born alive—and afterbirth, into a stream, and returned to a poorhouse. Two months later she passed a mass of hydatidinous placenta. At the base of the mass was a fleshy membranous substance. Near the point of the ovum was a vesicle the size of a grain of coffee, quite different from the hydatids, attached to the walls of the ovum by a whitish cord. This vesicle was considered to be the umbilical vesicle of an ovum that had disappeared. In this case there had been a twin-pregnancy; one of the embryos had died, and the ovum had been transformed into a hydatid mole, too adherent to the walls of the uterus to be expelled at the time of labour of the living child. If this explanation be not admitted, says Dr. Fischer, it must be concluded that true superfetation, or an impregnation subsequent to the labour, had taken place. As the woman was in custody the latter event was impossible.

A few words as to the old theory, which was supported by Linnæus and other not less eminent writers of that time, namely,

[a] Dr. Ashley—"On Vesicular Hydatids of the Uterus." London: 1856, p. 21.
[b] Ibid, p. 27.

that these uterine hydatidiform growths are identical with the true hydatids or acephalocysts found in other parts of the body. This conjecture is now abandoned by all modern writers on the subject; still there are some points in which the two diseases present considerable similarity, and, moreover, ordinary hydatids or acephalocysts, apparently possessing independent animal organization and vitality, have been found in the uterus. It must be admitted that the closest resemblance exists between hydatids and the primary nucleated cell formation of all organized structures, and it has been maintained that hydatids are nothing more than nucleated cells "rendered gigantic and monstrous by some erring or morbid action of the vital forces." But which ever of these theories be right, those who support either view have done little more than assert their own opinion, the question being one which the means of investigation at our command do not afford us the power of solving. The chief points of difference between the so-called "true hydatids" and those hydatidiform growths found in the uterus are, that the latter are generally found in aggregated masses, the several vesicles being united to each other by a common central stalk, to which they are attached by narrow pedicles, presenting an appearance somewhat similar to a bunch of white grapes hanging from its stalk; while the former exist as separate vesicular bodies, each of which is supposed to possess independent vitality. Moreover, the true hydatid cyst is commonly of a dense laminated structure, while the uterine hydatidiform growths are not contained within a parent cyst, and their capsule is of a remarkably thin membranous formation.

The particulars of a very interesting case of true hydatids found in the substance of the uterus were published in the *Lancet* several years ago by Mr. Wilton, Surgeon to the Brighton Lying-in Institution:—"The patient was a woman aged thirty-seven, the mother of four children. She was admitted into hospital, suffering from uterine hemorrhage and bearing down pains. She died four days afterwards, and on examination the veins of the fundus were found varicose and congested; a large mass of hydatids was found protruding into the cavity of the uterus, and a large cluster, equal in size to a small tea cup, was firmly adherent to the fundus. The lining membrane in the diseased part was entirely absent, and the masses of hydatids were firmly imbedded in the structure of the uterus, the vessels being dissected into layers by them. Other masses were found between the mucous membrane and the structure

of the uterus, and also in the right ovary, the substance of which was thus disorganized."[a]

It would, I think, be unprofitable to pursue this review of the various opinions which have been held at different times on this subject any further. The theory most generally adopted at present is, that hydatidiform moles differ from true hydatids in being the pathological degeneration or abnormal development of some one of the embryonic structures already existing in the uterus, and not independent organisms as the latter are. But, as I have already shown, there are many cases of hydatidiform mole of the uterus to which this theory does not apply. If, then, uterine hydatids sometimes occur under circumstances which prevent the possibility of their being connected with degeneration or abnormal development of any of the embryonic tissues—that is, in cases in which pregnancy has never existed—in what light, under these circumstances, are we to regard the occurrence of hydatidiform growths within the uterus? The answer to this is, I think, that we must look for the solution of this *questio vexata*, in such cases, either to those constitutional changes which lead to the formation of true hydatids in other parts of the body, or else to morbid action set up within the ovary of an unimpregnated female, and which results in the production of hydatidiform disease in a Graafian vesicle, and of its escape from the ovary into the uterine cavity, where it continues to increase in bulk, until it excites uterine irritation and expulsive action. The symptoms occasioned by hydatidiform disease in the uterus are extremely obscure, being chiefly those produced by the presence of the hydatidiform growths acting as foreign bodies, giving rise to irritation of the uterus, and leading to their expulsion therefrom.

The diagnosis of hydatids of the uterus is, indeed, very difficult, and in the early months it would be almost impossible to distinguish with certainty between this condition and ordinary pregnancy. If, however, in a case of supposed pregnancy there be no movement of the fetus after the fourth month, together with an absence of the sounds of the fetal heart, if ballottement cannot be practised after this period, if the morning sickness suddenly cease at an earlier period of gestation than is customary, if there be rigors, followed by a flaccid condition of the mammæ, a sense of a peculiar weight in the uterus, and an irregular enlargement and hardness of

[a] Mr. Wilton—In Lancet, February 1st, 1840, p. 590.

that organ—we may suspect that some pathological change has occurred in the ovum consequent on the death of the fetus. But we cannot pronounce with certainty any opinion on the nature of the pathological change which has taken place until the expulsion of the uterine contents, unless, indeed, as is often the case when hydatids are present, there are occasional discharges of water, or reddish serum, together with hemorrhage from the uterus in a case of supposed pregnancy.

The diagnosis between pregnancy and uterine hydatids may be a matter of great importance, involving the reputation of the patient. Dr. Hamilton in his lectures mentions a case in which a serious mistake of this kind was made by the most eminent physician of his time, the celebrated Dr. Cullen, who, during the absence of Dr. Hamilton's father, was called in to attend one of his patients who was suddenly taken ill, and was pronounced by Dr. Cullen to have miscarried. This opinion was unfortunately the cause of destroying the domestic happiness of the lady and her reputation, as she had been living apart from her husband for two years. On Dr. Hamilton's return he examined the mass expelled from the uterus, and at once declared it to consist of hydatids; but this opinion was then too late to restore the lady's character and the confidence of her family.

The expulsion of the hydatidiform mass from the uterus in the first case which I attended occurred in the fifth month of the supposed pregnancy, and it seems a fact worth observation that most cases of this kind take place about the same period. In the four cases of hydatid delivery mentioned by Drs. Sinclair and Johnston, two of the cases occurred at the fourth month, one at the eighth, and the other at the ninth month of pregnancy.[a] Mr. Watson of Warwick, published an admirably illustrated history of a case of this kind in one of the early volumes of the Transactions of the Provincial Medical Association, in which "the uterus before the expulsion of the hydatids occupied a space equal to that of a pregnancy of five or six months."[b] In two cases of this disease related by Dr. Ashwell the patients were both supposed to be about four months pregnant.[c] The same remark applies to a case narrated by

[a] Drs. Sinclair and Johnston's Practical Midwifery, p. 483. London, 1858.

[b] Mr. Watson—"A Case of Uterine Hydatids," in Transactions of Provincial Medical and Surgical Association, Vol. ii., p. 349. London: 1834.

[c] Dr. Samuel Ashwell—Treatise on Diseases of Women, p. 535. London: 1844.

Dr. J. B. Brown.[a] In Drs. M'Clintock and Hardy's case the woman was believed to be four months advanced in her first pregnancy.[b] In the two cases seen by Dr. Meadows "the patients were both supposed to have gone between five and six months."[c] Of the five cases of cystic disease of the ovum, the details of which are given by Dr. M'Clintock, in two the patients were supposed to be four months pregnant; in one to be three and a half months; in one to be two months; and in one to be six months advanced in pregnancy.[d] Dr. Byrne records a case in which the hydatidiform mass was expelled when the woman was believed about four months pregnant.[e] In some cases, however, the hydatids are expelled earlier, as in the case published by Dr. Moorhead, of Weymouth, in which a hydatidiform ovum was produced at about the tenth week by a woman, aged fifty, who had not had a child for twenty years before.[f] In other cases it may be much later, as in my second case, also in the case related by Sir James Simpson, in both of which the patients reckoned themselves gone beyond the full time of utero gestation;[g] and in that given by Mr. Ley, of South Molton, in which the woman was supposed by herself and her medical attendant to have gone her full time of nine months.[h]

In cases of hydatidiform moles of the uterus, the danger of alarming hemorrhage at the time of expulsion from the uterus, is a point generally insisted upon by writers, this was illustrated in the second case, the particulars of which I have described. In Clarke's "Observations on the Diseases of Females," the danger of uterine hemorrhage in such cases is thus spoken of:—"The os uteri is dilated; the hydatids are expelled by periodical pains; and then for the first time danger presents itself in the form of alarming hemorrhage. This hemorrhage is more frightful than that which follows the removal of the placenta from an uncontracted uterus;

[a] Dr. J. B. Brown—In British Record of Obstetric Medicine and Surgery for 1848. Vol. i., p. 21.

[b] Drs. M'Clintock and Hardy—Practical Observations on Midwifery, p. 233. Dublin: 1848.

[c] Dr. Meadows—Manual of Midwifery, p. 75. London: 1862.

[d] Dr. M'Clintock—Clinical Memoirs on Diseases of Women, p. 393-340. Dublin: 18—

[e] Dr. Byrne—In Dublin Quarterly Journal of Medical Science, 1865.

[f] Dr. Moorhead—On a Case of Hydatidiform Ovum, in Lancet, Feb. 21, 1863, p. 202.

[g] Sir James Simpson—"Obstetric Memoirs and Contributions," Vol. ii., p. 450. Edinburgh: 1856.

[h] Mr. Ley—In Medical Times and Gazette, Dec. 2nd, 1866, p. 662.

and the reason is obvious—the placenta covered only a limited space of the internal surface of the uterus, whereas the hydatids spring from every portion of the cavity." [a]

As to the general constitutional treatment of these cases, I do not think that the obstetrician can do much. The fact, however, that these hydatidiform productions generally occur in persons of an enfeebled and cachectic constitution obviously suggests the necessity for improving the condition of the vital fluid by a generous and nutritious regimen, and by the employment of tonic remedies, and especially chalybeates.

With regard to the special uterine treatment proper to be pursued in cases of hydatidiform moles, a very difficult question arises. Some authors lay it down as a rule that once we are satisfied of the existence of hydatid growths in the uterus by the symptoms which I have described, it becomes the duty of the practitioner to encourage the expulsion of the morbid growth, by cautiously dilating the os uteri and stimulating the uterine contractions. Such practice cannot, however, I think, be approved of, when we consider that hydatids may co-exist with natural pregnancy, and the uterus may contain a healthy fetus, which may be born alive at the ordinary period of gestation, although there have at the same time been hydatid growths in the uterus. Dr. Davis, in a paper read before the Obstetrical Society, has recorded the particulars of a case in which a hydatid mole was expelled from the uterus immediately after a living fetus and its placenta, at about six months' gestation, the hydatid growth being attributed by Dr. Davis to the degenerated ovum of a twin conception.[b] Dr. Hildebrandt has also recorded the case of a hydatid mole, together with a normally developed ovum.[c] Cases such as these two last, the number of which could very easily be multiplied, are sufficient to demonstrate the impropriety and danger of the rule to which I have above referred. Far better would it be to let nature take its course in every case of hydatidiform mole, for in due course the morbid growth will be surely expelled from the uterus, than by unnecessary interference run the grave risk of destroying a living fetus.

[a] Observations on the Diseases of Females. By Charles Mansfield Clarke, M.D. Part II., p. 116.

[b] Dr. J. Hall Davis, in Transactions of the Obstetrical Society of London, 1861, Vol. iii.

[c] Dr. Hildebrandt—Monat. für Geb., September, 1861, p. 224; and New Sydenham Society Year Book, 1861.

ART. XIII.—*Observations on Rupture of the Urinary Bladder, with the History of a Case that ended in Recovery, in which the Peritoneal Sac was Washed out with Tepid Water injected through the Rent in the Organ.* By HENLEY THORP, M.D., F.R.C.S.I.; Medical Attendant, Letterkenny Union Infirmary and County Fever Hospital; Consulting and Visiting Physician, Donegal District Lunatic Asylum; formerly Demonstrator of Anatomy, Royal College of Surgeons in Ireland, &c., &c.

RUPTURE of the urinary bladder is an accident so generally fatal that the history of an exceptional recovery is certain to be regarded with no ordinary interest. Out of upwards of fifty cases of this grave injury reported by different surgeons, and scattered through the archives of medical societies and journals, there are but three instances of recovery recorded—one occurred in the practice of the distinguished Surgeon of the Edinburgh Infirmary, Mr. Syme[a]; another was treated in the Meath Hospital, by the late Professor Porter;[b] and the third case is reported by Mr. Chaldecot, of Dorking.[c] In the two first instances referred to the lesion interested the anterior segment of the bladder, or that portion of the viscus uncovered by serous membrane, consequently the urine was extravasated, not into the cavity of the abdomen, but into the connective cellular tissue. In Mr. Chaldecot's case, however, the rupture is supposed to have taken place posteriorly, and although the patient was seen by the late Aston Key, who coincided in the diagnosis, it is to be regretted that any want of precision or incompleteness in the details of the case, should lead to doubts as to its real nature. Mr. Chaldecot, certainly, does not seem to be aware that the bladder is liable to give way in any other position than posteriorly—for, in remarking upon the absence of urine from the organ, after the occurrence of the accident, his words are: "If, therefore, it (the urine) did not escape into the peritoneum what else could have become of it?" In fact, this case has been the cause of a very sharp controversy between two authorities equally competent—one gentleman being sceptical as to whether the

[a] Contributions to Pathology and Practical Surgery, 8vo, 1848, p. 332.
[b] Rynd's Practical Observations on Stricture, p. 48.
[c] Provincial Medical and Surgical Journal, 1846, p. 333.

bladder was really ruptured.[a] That gunshot and other penetrating wounds of the bladder are not necessarily fatal is well understood—still eminent authorities might be cited who doubt the possibility of recovery from ruptured bladder with extravasation of urine into the the peritoneal sac. The following case, however, which has recently occurred in my practice. was seen by two other surgeons, and watched throughout with great interest and anxiety, places the question beyond dispute.

On the night of Friday, 28th February last, J. M'Auley, aged thirty, a respectable farmer, of sound constitution, sanguine temperament, and active habits, was thrown from his horse. Being intoxicated at the time of the accident, he could give no satisfactory account of the mode of its occurrence. The horse galloped home riderless—suspicions arose—a search was instituted, and shortly afterwards his owner, in a state of insensibility, was discovered on the road-side, about half a mile distant. In some 20 or 30 minutes consciousness returned. He then experienced a severe pain at the bottom of his belly, attended with an urgent desire to pass water, but no power of emptying the bladder. On visiting the patient four hours subsequently, I found him in a sitting posture, with his body bent forwards. He complained of an oppressive burning pain in the hypogastric region—there was a pressing inclination without the capacity to micturate—the abdominal muscles, more especially the recti, were rigid and tense, and any attempt to stand upright produced a great increase of suffering. He had neither vomiting nor rigor—nor did the surface of the belly present any contusion or other mark of injury. A full-sized gum elastic catheter entered the bladder without difficulty. At first no fluid escaped; but, upon pushing the instrument onwards, and at the same time turning it a little on its axis, about a tablespoonful of bloody urine flowed out. No further quantity coming away, I withdrew the catheter a short distance, twisted it round in another direction, and again passed it backwards, when an additional ounce of a reddish fluid welled over, without force or jet. By changing the position of the patient from side to side—turning him over upon his knees, and substituting a silver for the gum elastic instrument, I at length

[a] Glasgow Medical Journal, No. XXVI., July, 1859, p. 168.

[In this place I beg to offer my best thanks to Dr. F. D. Weisse, an American Physician, with whom I have not the pleasure of being personally acquainted, but who, hearing accidentally of the case that forms the subject of the present communication, kindly directed my attention, through Surgeon George Porter, to the controversy above referred to.]

succeeded in obtaining nearly half a pint of urine, mixed with blood. The patient expressed himself as much relieved; and, having placed him in a half sitting posture, with his shoulders well raised, I administered a teaspoonful of laudanum in a glass of water, and again introduced the gum elastic catheter—pushing its extremity not further than the cervix vesicæ, and when a few drops of clear urine distilled over, it was fixed in this position. I left the patient, but returned in a few hours—having in the meanwhile provided myself with a half-pint elastic bottle and stop-cock—and found him still complaining of the burning pain in the belly, although not so severe as at my previous visit. He had not slept during my absence, but the distressing desire to pass water had passed off. The instrument had retained its position, and a drop of clear urine escaped at intervals from its extremity. Withdrawing the gum elastic, I now introduced a silver catheter into the bladder. The organ felt contracted, and did not easily admit of the complete introduction of the instrument, nor could the latter be depressed, pushed onwards, or moved about with the same ease as previously. Furthermore, the manipulations caused much pain; and, accordingly, the gum elastic catheter, now mounted upon a strong stilet, shaped like a sound, was again passed into the bladder; its movements, likewise, were at first restricted and painful, until after cautiously probing and turning its point, it entered nearly its full length, when a different feeling of resistance was communicated, and it could be moved about with somewhat greater freedom. The stilet being withdrawn, a tablespoonful of reddish urine flowed away. The stop-cock of the elastic bag was next adjusted to the catheter, and tepid water, to the amount of three bagfuls, injected through the instrument. Each portion when introduced was retained for a couple of minutes, and then allowed to return through the catheter, so that not more than eight ounces were injected at a time into the abdominal cavity. At first the water returned of a reddish tinge, but the last half pint was clear and bloodless. Each bagful regurgitated in a slow and interrupted manner, and pressure had no influence in accelerating or otherwise altering the mode of its discharge. During these proceedings, which occupied about twenty minutes, the patient was caused frequently to change his position, so as to mix the injected fluid as much as possible with whatever urine remained in the peritoneal sac. As soon as the abdomen was emptied as far as practicable, the patient was again placed upon his back, with the

pelvis well depressed, and the catheter withdrawn partially—that is to say, until its extremity only projected into the bladder; and when the urine commenced to drop away, the instrument was securely fixed with a proper jugum. Ordered 40 leeches to the lower part of the abdomen ; when the leeches drop off, a warm bath for 30 minutes; afterwards, a bran poultice; one grain of opium and half a grain of calomel every second hour. Diet to consist of bread and milk, corn-flour pudding, arrow-root, rice, gruel, and barley water.

Sunday morning.—Patient is free from pain; countenance, good. He has had no rigor; abdominal wall continues rigid and resisting; some tenderness of the hypogastrium when firm pressure is made thereon, but no distension ; pulse quiet and natural—86 ; urine escapes *guttatim* through the catheter. Ordered—24 more leeches, to be applied to the belly; pills and bran poultice to be continued. At this visit I had the advantage of consulting with Dr. G. Elliott, who kindly accompanied me to see the patient.

Was sent for hurriedly on Sunday night, or, rather, Monday morning, at four o'clock, a.m. The catheter had escaped from the patient's bladder during sleep. He awoke, suffering some pain, and had a slight rigor. Pulse, 90. I re-introduced the instrument, and directed another dozen of leeches to be applied. Continue pills. These latter had not been taken for some hours, the patient being asleep.

Monday afternoon.—Going on well ; no pain. Pulse 86, and soft. Catheter retains its place, and is acting satisfactorily.

Tuesday, 10 o'clock, a.m.—The instrument again escaped from the patient's bladder during sleep. Nevertheless, after awakening, he passed, without difficulty or pain, a wine glassful of urine. No change in other respects. The catheter was again introduced and carefully adjusted. And as the patient, while sleeping, unconsciously tampered with it, precautions were taken to prevent him repeating the practice. Another dozen of leeches to be applied over the hypogastrium, where some tenderness continues, although the muscles are less tense and the abdomen softer. The pills are taken regularly and the bran poultice kept on constantly.

Wednesday morning.—Patient slept well during the early part of last night, but awoke in the morning with a severe pain extending over the entire abdomen, which is tense, tender to pressure, and distended at its upper part. His countenance is greatly altered for the worse, and bespeaks much suffering; he had a

shivering during the night. The pain, although constant, has exacerbations of greater intensity coming on at intervals, which the patient attributes to what he calls the "working of the intestines." Pulse 96, small. An emolient enema brought away a scanty hard motion. The evacuation was attended with much relief. Apply a mustard cataplasm over the whole abdomen, and smear it afterwards with half an ounce of mercurial ointment. Continue the bran poultice.

Thursday.—Countenance still much depressed. Abdomen, although less painful, remains tense, and tender to pressure; pulse 90, unsteady, with an intermission; nausea and thirst are present. Patient's gums exhibit a diphtheritic appearance, and there is a slight mercurial fetor. Bowels moved at 5 o'clock, a.m.; motion natural. Has not taken the pills for six hours. To have effervescing draughts every third hour, and two grains of grey powder and one of opium every second hour.

Friday, March 6th.—Patient is rather improved since yesterday; salivation fairly established; mouth sore; abdomen less swollen, but still tender to pressure, more especially in the iliac regions. Pulse 86. Apply again the mustard cataplasm; stop pills with mercury and chalk; one grain of opium every second hour. On this day Dr. Carre, of Ramelton, accompanied me to examine the case and see the patient.

Monday, 9th.—Since last report the patient has progressed most favourably. He has no pain, and the abdomen is soft and compressible. He takes, when awake, the grain of opium every second hour; nevertheless his bowels are moved once daily, and the dejections are natural. He omitted the bran poultice for a day, but some pain and uneasiness returning he re-applied it with complete relief to these symptoms. The constant retention of the catheter having occasioned a purulent discharge from the urethra, the patient, possessing sufficient dexterity, was permitted to introduce the instrument for himself at short intervals. The farinaceous diet prescribed in the first instance has not been deviated from up to this date. To-day he is allowed chicken broth.

March 12th.—Catheter to be dispensed with. The patient has now the power of retaining his urine for several hours without inconvenience, and of emptying his bladder without difficulty. At this date, also, the opium pills and all other medicines were discontinued. He was allowed animal food, and permitted to leave his bed and walk about.

On the 15th the patient complained of severe pain in the calf of left leg, which was swollen and tender, without, however, redness or erythema; and on the 16th there was also tenderness in the groin, and along the course of the saphena vein. Rest for a few days in the horizontal posture, with stuping, relieved those symptoms, and on the 21st he was again able to be up and to take gentle exercise. By the end of the month he had no symptom of the injury remaining, save that he was obliged to rise sometimes twice in the night to make water. His appetite was good, and his strength, which had been greatly reduced, was fast returning. His convalescence is now complete. He enjoys excellent health. Has no vesical irritation whatever, and is able to retain his urine for the normal period.

Since the publication of the late Dr. Harrison's "Memoir on Rupture of the Urinary Bladder,"[a] upwards of thirty years ago, in the pages of this Journal, it may be truly stated that no advance whatever has been made in regard either to the pathology, diagnosis, or treatment of this fatal accident. No doubt cases have been reported from time to time by various practitioners at home and abroad, in which are detailed the appearances found at numerous *post mortems;* and papers, some of them of great interest, have been read and discussed at scientific societies, exclusive of the chapters on the subject to be found in several class-books compiled by the most distinguished surgeons of the day; nevertheless, nothing has been really added to our knowledge of the injury over and above what is contained in the admirable treatise referred to. The case of M'Auley, just detailed, derives its interest not from any peculiarity in its history or symptoms, but because of the singular fact of the patient's recovery, and that a practice not hitherto adopted had been employed to remove the urine from the abdominal cavity. Save and except in its termination, it is a repetition of the tale so often told by others concerning the accident. The man was thrown from his horse in a state of intoxication, but whether the bladder was ruptured from a general concussion of the body (as in a case given by the late Mr. Cusack[b]), or from direct violence applied to the hypogastric region, cannot be determined; nor could I ascertain the state of the viscus in regard to its distension at the time of the accident, as the patient was totally oblivious as to when he had previously passed water

[a] Dublin Medical Journal, Vol. ix., July 1st, 1863.
[b] Dublin Hospital Reports, Vol. ii., p. 312.

However, I am inclined to believe that the organ was not very full when the laceration took place, because at first, with the greatest trouble and care, I could only obtain about eight ounces of bloody urine, and I do not believe that, subsequently, I was enabled to displace much more from the abdomen by the injection of tepid water. Nor does the condition of absolute distension appear to be a *sine qua non* of rupture. In the "Transactions of the Pathological Society" of London, Mr. Prescott Hewitt details an interesting series of cases (ten in number), in one of which an ounce of fluid only was found in the peritoneal cavity after death; "and yet the rent in the bladder was large enough to admit of the passage of the two first fingers." In regard to this case, also, a singular circumstance is mentioned: "that there was no trace of inflammatory action about the serous membrane."

The diagnosis of the accident in M'Auley's case was exceedingly simple. The position of the patient in the sitting posture, with his body bent forward, the spastic rigidity of the abdominal muscles, and the urgent but unavailing efforts to pass water, enabled me to predicate the mischief before I introduced the catheter. Then the empty state of the organ, and the mode the bloody urine overflowed the instrument, without impetus, in small quantities at a time, irregularly and interruptedly, uninfluenced by pressure above the pubes, but clearly affected by pushing the instrument backwards, changing its direction, turning it on its axis, &c., as also by the postural expedients described, placed the nature of the case beyond the possibility of doubt. However, it is not every case of ruptured bladder that presents features so palpable and undisguised. One of the most remarkable facts in relation to this lesion is the tolerance occasionally manifested, and the power of locomotion for hours, even days, possessed by some of the sufferers whose histories are recorded. Mr. Hind[a] relates the case of a bricklayer who was knocked down and run over by a cab. He walked from Lambeth to Pimlico, a distance of two miles, and died three days afterwards. On opening the abdomen the bladder was found small and contracted, with an oblique fissure an inch and a half long in the posterior inferior part, and opening into the peritoneal cavity. But the most extraordinary instance is that given by Harrison.[b]

A man engaged in a scuffle on a Saturday night had his bladder

[a] Medical Society of London. [b] Loc. cit.

ruptured by his opponent falling across the lower part of his abdomen. On Sunday he eat his breakfast, walked into town (a distance of three miles), had his urine drawn off by a surgeon, and returned in the evening. On Monday morning he arose at his usual hour, and went to work, drank some whiskey, and had a catheter again introduced in the course of the afternoon. Tuesday morning he felt somewhat better, passed urine at frequent intervals, and walked about part of the day, and it was only on Wednesday that decided symptoms of peritonitis had manifested themselves, and that the nature of the injury was discovered. The patient expired on the eighth day, and on the posterior surface of the bladder was discovered a fissure an inch and a half in length.

Another fact deserves to be specially noticed, as ignorance of it might lead to grievous oversights:—a solution of continuity in the bladder does not necessarily incapacitate the viscus from retaining a portion of its contents, and even discharging them through the urethra. In proof of this proposition several examples might be cited; it will be sufficient, however, to give one other which occurred in the practice of Dr. Jos. Grueber, of Vienna.[a] A man, aged thirty-two, previously in good health, retired to bed, having drank an unusual quantity of spirituous liquor. He awoke in the middle of the night with an urgent desire to pass water, and in attempting to descend from a two-story-high bed, fell from a height of about six feet, his belly striking against the edge of a wooden box. Although he felt pain in the abdomen, he was able *to rise and to pass urine without difficulty*. The patient died after eighty hours' suffering, and the *post mortem* was made by Professor Rokitansky. A laceration of an inch and a half in length was found in the posterior wall and summit of the bladder, a little to the right side, below which was a second tear, involving, however, only the mucous and muscular coat.[b] It is clear, therefore, that certain cases of ruptured

[a] Dublin Hospital Gazette, Vol. v., p. 263.

[b] Simple rupture of the bladder, produced by a fall or a blow on the hypogastric region, or a general concussion of the body, and uncomplicated by fracture of the pelvic bones, solution of continuity in the abdominal walls, gun-shot injuries, &c. (and it is to simple rupture that the observations contained in this contribution particularly apply), takes place, as is generally known, most commonly in the posterior wall, and the explanation of the fact given by Dr. Harrison has never been questioned:—"The several tunics of the bladder admit of considerable distension, but least of all the peritoneal; when, therefore, the bladder becomes fully distended, and is then subjected to any violent or sudden compressing force, this tunic, which is then tense and comparatively unyielding, will crack, while the subjacent tunics, which are connected to it, will be torn along with it, whereas, in other situations, where cellular tissue occupies the

bladder are liable to betray practitioners into serious diagnostic errors, and the injury may be overlooked, or mistaken for retention or suppression of urine, injury of the kidney or urethra, peritonitis or enteritis, and that such mistakes have happened is unquestionable. "I once found," says Dr. Harrison, "the urinary bladder ruptured, with peritonitis, in a case in which it was not suspected, the patient having been treated as labouring under fever."

Of no less practical moment is the advantage of establishing a differential diagnosis between cases of ruptured bladder, with discharge of urine into the peritoneal sac, from those rarer instances in which the organ gives way anteriorly, or where it is uncovered by serous membrane. The consequences and the treatment of the two lesions are totally different. In one case the irritation caused by a fluid loaded with effete salts and prone to decomposition, sooner or later excites peritonitis. In the other the effused urine produces destructive cellulitis with gangrenous mischief and fever of a typhoid character. Can we, then, soon after the accident, and with a view to subsequent treatment, diagnosticate with certainty the situation of the rent, with reference to the line of reflection of the serous investment off the posterior segment of the organ? In the majority of cases, when the urine is extravasated into the abdominal cavity, I believe the diagnosis can be made with unerring decision. The manner in which the urine overflows the catheter without impetus or jet, and the fact of our being able to obtain it in *quantity*, by skilful catheterism, are conclusive proofs of its discharge not from the cavity of the bladder, yet of its being free or unconfined—and, therefore, that it comes from the peritoneal sac. If, on the other hand, having a clear history of the case before us—being certain, in fact, that the bladder had previously contained a quantity of urine—the catheter failed to discharge this fluid, or only gave exit to a *small quantity on its first introduction*, there are then good grounds for concluding that the urine was not free, but confined in the cells of the areolar tissue, and consequently unable to return into the bladder through the laceration—in short, that the rupture had taken place through the anterior portion of the viscus.

place of the serous membrane, the coats of the bladder will yield considerably before they give way, or admit of laceration." Yet, cases do occur in which the rupture occupies the anterior wall, where no serous membrane exists. Such was the remarkable case of recovery already referred to, as given by Syme; and the case quoted in the text, in which a solution of continuity existed posteriorly, *involving the mucous and muscular coats*, but leaving the peritoneal covering intact, may cause some doubts as to the correctness of the explanation given in the paragraph just quoted.

I shall conclude by offering a few observations upon the treatment of this accident. The first indication is obviously to remove, as completely and speedily as possible, the effused urine from the abdominal cavity. The operative measures hitherto proposed for this purpose are three in number:—1. Paracentesis above the pubes. 2. The proposal of opening the belly by an incision along the linea alba—sponging out or otherwise removing the effused urine, and closing the rent in the bladder by interrupted suture. 3. Tapping, or opening by incision the recto-vesical *cul de sac* from the rectum. The first-named operation has been practised twice—first by Bonet,[a] and subsequently by the late Mr. Cusack.[b] In both cases, abdominal fluctuation was distinct. In Bonet's patient, however, blood only flowed through the canula ; but in the instance related by Cusack, "a large quantity of clear urine escaped, and at the same time flowed freely through a catheter introduced into the urethra," with great relief to the patient. Both cases ended fatally. I would strongly recommend the adoption of postural means, in case it be deemed prudent on any future occasion to repeat paracentesis. Let the patient be placed upon his knees, with his shoulders depressed so far as to bring the pelvis into a position above the canula. In this manner, the artificial outlet being at a depending point, both urine and blood could be evacuated from the abdomen. The second proposal mentioned has never been put into practice ; and although the results of ovariotomy and the successful extirpation of the entire uterus and ovaries might encourage a sanguine surgeon to undertake the operation, the majority of the profession will be slow to adopt so bold a measure, while others, less hazardous, offer the slightest prospect of success. The third method of discharging the urine from the abdomen was first propounded by Dr. Harrison. It occurs to me, however, that more difficulty would be encountered in carrying out the plan than he seemed to anticipate. The reflection of the peritoneum from the rectum to the bladder takes place at least three inches and a half from the anus—that is to say, almost beyond the reach of the finger—and a trocar pushed upwards might easily penetrate the small intestines, unless, indeed, a considerable quantity of fluid existed in the cul de sac. And, should a bistoury be preferred, the risk of mischief would not be lessened. To cut upon a staff introduced through the urethra

[a] Sepul. Anat., Lib. 3, Sec. 24, Obs. 12.
[b] Dublin Hospital Reports, 1818, Vol. ii., p. 312.

would be to open the bladder as well as the peritoneal pouch into the rectum ; and if such a wound, supposing it effected the object in view, should be regarded as but a trivial addition to the laceration already existing, incomparable in its immediate beneficial results to its undefined consequences, yet we must recollect the possibility of adhesions existing between the serous surfaces in this locality and of lymphy exudations extending far beyond the limits of the incision, and that such products would be likely to interfere with the free evacuation of the urine from the abdomen, thus rendering the operation altogether futile.

How far the skilful employment of the catheter, postural manœuvres, and the injecting of tepid water or some bland fluid into the peritoneal cavity, through the rent in the organ, may supersede the performance of any of the operations alluded to, must be determined by future experience and observation. I cannot, however, conceal my belief that the practice adopted in the case of M'Auley may not always be easily accomplished. Difficulty may exist in discovering the laceration in the bladder, and uncertainty as to when we have really succeeded in passing an instrument through it, as the flaccid walls of an empty bladder folding themselves round a catheter would closely simulate the impression capable of being conveyed by a loose mass of small intestines. How, then, are we to know when the instrument has really passed through the vesical rent into the abdomen? One certain proof of the position of the instrument was furnished in the case of my patient:—the discharge, in quantity, of a fluid (after the catheter had passed its full distance) differing in physical properties (being red) from that which previously escaped, pellucid and *guttatim*, from the instrument. This fact assured me that I had reached the peritoneal cavity, and the manner the injected water afterwards came away confirmed the correctness of the opinion I had formed.

Next in importance to the primary indication of dislodging, as completely and expeditiously as practicable, the irritant and septic fluid from the belly, is that of preventing a recurrence of the extravasation. This object can only be attained by maintaining the bladder in a condition of complete contraction and emptiness—distension of the organ, even to a moderate extent, must tend to re-open the laceration, disturb its edges, and endanger the integrity of the layer of plastic lymph laid down on its posterior surface. In some of the necropsies recorded, the appearance of this adventitious stratum was very remarkable, lining the pelvis throughout, and

giving a thick coating to the contained viscera; but in a reparative point of view, it is only that portion of the exudation connected with the bladder that concerns us; this, if perfect, and sufficiently consolidated, must act not only as a barrier between the peritoneal sac and the cavity of bladder, but also as an appliance mechanically holding together the edges of the laceration, pending the slower union of the muscular and mucous coats, by which the process of repair is to be definitively accomplished. It is obvious, therefore, that distension of the bladder, or the rude introduction of instruments, must destroy the reparative action that nature has set up, and lead to a renewal of the original mischief. A perusal of the history of the lesion cannot fail to convince the inquirer that this fatal error was committed in several instances. With the view, then, of obtaining the most perfect rest for the ruptured organ, and preserving it in a state of emptiness and contraction, a full-sized gum elastic catheter should be introduced, not further than the cervix, and securely fixed in this position.

The question may be asked—how long is it necessary to employ the catheter in the manner described ? The appearance found at one *post mortem* gives, at least, an approximative answer to this inquiry. The patient expired just eight days after the accident.—(I quote again from Dr. Harrison's memoir):—"The posterior surface of the bladder was now seen with an oblique fissure through it, about an inch and a half in length. The edges were thickened and *slightly adhering* to each other, so that I was *unable to pass any of the pelvic fluid into the bladder*." Consequently, on the eighth day there may exist a tolerably perfect union of the lacerated surfaces. Nevertheless, I do not believe it would be prudent to dispense with the catheter at this early period. I should say, that before the expiration of a fortnight the bladder ought not to be permitted to empty itself by its own unaided efforts. Nor is the influence of position to be lost sight of. During the greater portion of this time the patient should be kept on his back with his shoulders well elevated.

With reference to general treatment, I have few observations to make. The warm hip-bath, relays of leeches for several days, opium in full doses, frequently repeated—calomel in small doses combined with it, until the mouth become affected—hot stupes, and bran poultices over the abdomen, are the means to be had recourse to, and which all practical surgeons are likely to adopt. In the case of my patient, the hip-bath afforded great relief. It was employed

immediately that the first batch of leeches dropped off; and besides causing blood to flow freely from the bites, it assuaged the oppressive burning pain in the belly. Calomel was also administered until ptyalism was fairly established; and although there is a feeling growing up at the other side of the channel that this agent does not really merit the reputation it has acquired for controlling serous inflammations, most experienced men in this country, who have observed its effects in pleuritis and pericarditis, and seen its action in iritis, will be slow to relinquish so time-honoured and trusty a remedy, in deference to mere theoretical opinions, no matter from how respectable a quarter they emanate.

In regard to counter-irritation, I may be permitted to suggest the abandonment of blisters. Several of the subjects of the injury we are considering had large blisters applied to their bellies. The absorption of cantharides from a blistered surface can scarcely be expected to relieve the patient by rendering his urine less irritating, however otherwise the vesicant may exert a beneficial influence. Sinapisms of strong mustard, if well prepared and often repeated, will separate the cuticle and do all that can be required in the way of counter-irritation, and are not open to the serious objection to ordinary blisters, just pointed out.

In conclusion, I may as well anticipate an objection which may possibly be made to the plan of injecting water into the peritoneal cavity, as practised on the patient whose case I have detailed, and which forms the text of the foregoing remarks. It may be urged that tepid water itself introduced into a serous cavity will act as an irritant, and is likely to excite inflammatory action, by reason of its low density, when compared with that of the blood contained in the capillary vessels; but we must recollect that water is less irritating than the fluid it is intended to displace or remove, that it contains no decomposing or effete principles; and, moreover, when introduced into the peritoneal cavity, it is really not water simply, but water *plus* whatever urine is present in the cavity; in short, a mixture whose density must vary according to the relative proportion of the two fluids present. In how far the practice, apart from the other measures had recourse to, contributed to my patient's recovery, must be determined by the experience of others, who hereafter may be inclined to adopt it.

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Art. XIV.—*On Whitlow.* By Edward Hamilton, F.R.C.S.I., one of the Surgeons to Dr. Steevens' Hospital.

The occurrence of an unusually severe form of paronychia during the past session has been noticed by many practitioners in this city. Having had a number of such cases simultaneously under treatment, which presented peculiar features, I have been induced to place them on record. The clinical history of inflammations about the fingers teaches us that they present modifications dependent on the anatomical structure primarily attacked, as well as on the special type of the morbid action. Having regard to the structure engaged we can recognize four forms of the disease:—*sub-cuticular*, *sub-cutaneous*, *thecal*, and *periosteal;* bearing in mind the established pathological fact that no matter in what tissue the inflammation takes its origin, it is liable to extend from one to another, so as, eventually, to implicate all the anatomical constituents of the hand. This classification was originally proposed by Garengeot, and I think each of these four varieties presents symptoms and pathological characters sufficiently marked to justify its separate consideration. The second ground of classification—the peculiarity of the inflammatory process—is generally admitted in our systems of surgery ; and although most whitlows approach closely to the *erysipelatous* type of disease, yet I think we meet with cases which may fairly be designated *phlegmonous;* while the examples which suggested this memoir were undoubtedly gangrenous, or, as that term has already been applied by Dr. Todd, in the Dublin Hospital Reports (1818, Vol. ii.) to a very peculiar and unusual form of disease affecting the hand, I would suggest the title *furuncular*, which also more clearly conveys an accurate idea of the changes which this type of the disease developes in its progress. The sub-cuticular form is truly erysipelatous in its nature, and although usually a very simple and unimportant variety, may occasion results of a most troublesome and teazing kind. When the disease commences at or spreads to the vicinity of the nail, although attended at first with the mere smarting prickling pain of superficial inflammation, the suffering becomes most acute if the matter extends under that structure. In this form of whitlow a very troublesome result of inflammation has been especially alluded to by John Hunter, and the accuracy of his delineation cannot be questioned. The small vesicle filled with sero-purulent fluid, which

is so apt to form at the side of the nail, bursts, and a granular, reddish fungus protrudes through the opening, as Hunter says, "like paint through a bladder," and being pressed by the edge of the nail, becomes most acutely sensitive, the slightest touch causing an amount of pain and suffering, almost inconceivable, as he says, "gives a greater idea of soreness, perhaps, than any other morbid part of the machine ever does." A lady who was under my care at the same time as the cases from which the drawings were taken, was unable to sleep for nights with the severity of the pain. This appearance is well depicted in Figures 1 and 2. In other examples, ulceration spreads round the edge of the nail, which becomes embedded in the sore, giving rise to the intractable disease so graphically described by Abernethy. The treatment of this sub-cuticular paronychia, when free from complication, may be conducted on the ordinary principles of surgery, as applied to a local inflammation. These are the cases in which the application of the nitrate of silver, as advocated by Higginbotham, has been attended with most success. But, to be of use, it must be resorted to on the very outset of the inflammation, as I am convinced that the indiscriminate employment of this application at a later period is not only useless but positively pernicious ; if resolution does not take place, the parts are in a worse condition from its effects, the cuticle being thereby rendered denser and more contracted, presses most injuriously on the inflamed tissues beneath. A much more useful application, in the incipient stage of the disease, is the liquor ammoniæ acetatis, used under a cover of oiled silk, as a water dressing. It softens the nail, and the fold of dense cuticle which surrounds its margin, renders the parts more pliant and yielding, and consequently less liable to irritate the tender surface around. The projecting papilla must be destroyed by the nitrate of silver applied in powder, strong solutions, or even the solid stick being ineffectual for that purpose.

It is questionable how far the cases described in the Dublin Hospital Reports, by Dr. Todd, are to be regarded as true paronychia. The symptoms were altogether peculiar, and indicated severe constitutional disturbance, which terminated in some cases fatally, while the local mischief seemed to point to some special interference with the circulation of the blood. If grouped with paronychia, they would belong to the sub-cuticular variety; but the "*paronychia cutanea gangrenosa*" is so remarkable in its history, symptoms, and prognosis, that we are fully justified in classing it as a disease *sui generis*. I

have myself seen but a single case in which the characters attributed to it were manifested.

The second or sub-cutaneous is by far the most frequent variety; and in the majority of cases, where the disease attacks deeper structures, it extends to them from the sub-cutaneous areolar tissue; so that, in a practical view, it is the most important. A slight prick or contusion of the skin, especially with certain external conditions—probably atmospheric, for all have noticed its tendency to be epidemic—is followed by throbbing pain, heat, tenderness, and swelling. The peculiar sensation of throbbing arises from an actual increase in the calibre of the arterial tubes, effected through the vaso-motor nerves, as may be felt by the fingers placed at each side. If resolution does not quickly occur, suppuration ensues, which is usually limited, unless the constitution be unhealthy. In the early stage, no remedial measure equals the continuous hot water bath, as originally recommended by Platner ; but, to be of any use, it must be employed almost without intermission, boiling water being added to the bath until a temperature is tolerated which we could not *a priori* suppose. This treatment, combined with saline purgatives and a careful search for and removal of foreign substances, will seldom fail to effect resolution. If the disease resists this treatment, incisions must be resorted to, or it will extend to the fibrous structure beneath, and develop the third, or *thecal*, form of paronychia. In the cases which are here delineated, selected from a number under observation at the same time, the tissues were infiltrated, not with pus, but an exudation substance, having all the characters of that found in anthrax and boils, and the appearance of the surface, which is well portrayed in Figures 3 and 4, reminds us forcibly of what is seen in these furuncular forms of inflammation. The exudation substance was tough and matted into the meshes of the areolar tissue so firmly that repeated incisions were necessary to permit of its escape, small portions only appearing through the cut. The amount of constitutional disturbance was very great, indeed, and the symptoms of general irritation out of all proportion to the extent of the local mischief, patients becoming prostrated almost from the commencement. In this epidemic there was also manifested a remarkable tendency in the disease to recur after its apparent subsidence. From these repeated attacks of this peculiar inflammation, the soft structures of the finger and hand became apparently disorganized, and converted into a substance resembling adipocere, tearing across on

the least extension being made. In the treatment the state of the system from the first demanded a stimulant and nutritive regimen, with quinine and opiates at night. Incisions were made wherever the soft pulpy condition indicated the exudation deposit; and the employment of carefully adjusted pressure, applied day after day, to each finger separately, had a wonderful effect in checking the disease, and restoring the functions of the fingers, which appeared hopelessly disorganized. The great value of pressure in the treatment of anthrax and other furuncular inflammation, is now generally admitted by hospital surgeons, so that they do not hesitate to employ it in preference to every other means, even in the most unpromising cases. The resemblance, I might almost say the identity, of the pathological changes in these cases of whitlow and in anthrax, suggested to my mind the idea that a mode of treatment so eminently successful in the one would not fail in the other, and the result fulfilled my most sanguine expectations.

The *thecal* form rarely presents itself as a primary disease, but usually supervenes on inflammation attacking the soft parts, more especially of the ungual phalanx, where the various component tissues become blended, and is, generally, of traumatic origin. Here it is we meet with that characteristic deformity of the hand which is so familiar to every practical surgeon. The back of the hand swollen, red, glazed, and œdematous; its palmar aspect hard, brawny, or the cuticle soddened, the fingers semiflexed, the forearm above the annular ligament red and tense. The irritation, soon implicating the lymphatic gland, over the inner condyle, may spread even to those of the axilla. The constitution quickly sympathizes with the local mischief. The fibrous structures soon succumb to the intensity of the inflammation. The tendons slough, and the finger becomes stiff, and almost useless. Once the fibrous tissues have become fairly involved in the morbid action, I believe all treatment is utterly unavailing, save and except prompt, free, and deep incisions. Occasionally, some benefit may be derived from leeching and fomentations, with active purgatives; but the risk of losing valuable time in the trial of these means counterbalances the prospect of their success. As to the place and mode of these incisions, the directions laid down by most surgeons, and usually followed, are—to cut on the anterior aspect of the finger in its middle line, avoiding the two distal creases, which indicate the position of the phalangeal articulations. The proximal crease does not correspond to a joint, and may be divided; but it is not desirable

or generally necessary to carry the knife much above it toward the palm, as the main digital arteries divide midway between this and the palmar or metacarpo-phalangeal crease, sometimes rather nearer the web of the fingers, and are irregular as to their position on the first phalanx, and hemorrhage would be a troublesome complication to this condition of the hand. The incision having terminated at the mark, a director may be passed beneath the palmar fascia, which will permit the escape of matter. Should it be necessary to divide this structure, which is not often the case, the end of the instrument should be a little bent, so as to keep it closely inclined to the deep surface of the fascia, after it has been introduced beneath it, and thus cause it to pass superficial to the nerves and blood vessels. This division of the structures in front of the finger, down to the bone, very frequently causes destruction of the tendons, loss of their synovial investment, and, as we too often see, a stiff and almost useless finger. Hence, I have been led to adopt the lateral incision, and I think with better results. The danger of wounding the digital arteries, as they run along the sides of the finger, which has been urged as an objection against this proceeding, may easily be avoided by ordinary care, as their position can be felt most distinctly, and the operator can keep behind them. To be effectual, an incision must be made at each side of the finger, of course keeping clear of the joints. These lateral incisions are peculiarly useful, when the inflammation, as it frequently does, shows a tendency to implicate the fibrous investment on the back of the phalanges. I have never seen a case in which division of the anterior annular ligament was warranted, and I should hesitate before adopting a proceeding so fraught with danger to the integrity of the wrist. Where the matter burrows upwards under the fascia to the forearm, an incision in the middle line, above the ligament, freely dividing the fascia, will enable the surgeon to pass his director beneath the ligament into the palm, and make a track for the escape of inflammatory products.

In many instances we find the periostium participate in the morbid action, causing necrosis of the phalanx; but we meet with a sufficient number of cases in which the disease appears to have its origin in the bone or periosteum, to recognize the existence of true *periosteal paronychia*. This affection is peculiarly apt to attack the ungual phalanx of the thumb, and is invariably associated with syphilitic taint or strumous diathesis. The soft tissues retaining their health for a considerable time, frequently until the bone is completely

necrosed, and acting as a foreign body, causes an abscess, on the opening of which the bone can be felt, bare, dry, and necrosed; it can be removed without much pain or difficulty. The parts rapidly recover their health, and assume a very remarkable appearance, the nail curving forward, as exhibited in the drawing, No. 5. Constitutional treatment and perfect rest afford the only chance—and small it is—of arresting its progress. The sooner the bone is removed, the sooner will the parts recover.

ART. XV.—*Bothriocephalus Latus, or Broad Tape Worm, its Occurrence in Ireland, with Remarks on its Claim for Admission into the List of our Indigenous Fauna.*[a] By Dr. W. FRAZER, M.R.I.A., Hon. Member Montreal Medico-Chirurgical Society, &c.

TAPE worms are of rather rare occurrence in Ireland, though both Tænia solium and T. mediocanellata are met with, the latter being comparatively seldom seen, or, perhaps, it would be more correct to say, seldom recognized, for the first instance in which it was detected was recorded by myself in the *Medical Press and Circular* a few months since; I have reason to believe, however, that it has heretofore been confounded with the T. solium, and is far more common than generally supposed throughout the country. There can be no question that the broad tape worm, or bothriocephalus, is by far the rarest of this class of entozoa, for the fourth recorded case of its having been discovered in Ireland was described by me in the pages of the *Press* for April 10, 1867; the present case is, therefore, the fifth instance where it has fallen under medical observation, and it possesses peculiar interest from the fact, that whilst in almost every patient infested by this animal there are grounds for ascribing the vermination to some foreign and continental source, the patient from whom the present example was obtained had never travelled beyond the limits of Great Britain and Ireland. So far as can be ascertained, all the bothriocephali yet expelled were referable to B. latus; the species B. cordatus, common in dogs in North Greenland, and occasionally finding entrance into the bodies of their masters in that bleak territory, has not been noticed in Ireland, at least in the human being.

[a] A Paper read before the Natural History Society of Ireland.

The geographical range of distribution of B. latus is ascertained with tolerable accuracy in northern Europe; its southern limits are less thoroughly known. It prevails extensively in the departments of Switzerland, and spreads from the south of France through central Germany and Poland, at least to the eastern borders of European Russia, for a gentleman informs me he observed it at Kazan, where it is often met, though less prevalent there than the true Tænia. Northwards its habitat extends through the Baltic provinces and Holland; and Dr. Huss, of Sweden, describes it as extremely prevalent along part of the Lapland frontier, in Finland, and on the shores of the Gulf of Bothnia. In the south of Europe it has been recognized in certain of the Italian cities; and there are reasons to believe it reaches even to Northern Africa, Algeria, and Abyssinia. It is also quite possible it may yet be discovered spreading far eastwards through the regions of Central and Northern Asia, for Kuchenmeister more than suggests it was imported into Europe from those lands following the direction of Tartar and Mongol migrations from their primitive Asiatic settlements; still he admits the important qualifying fact, that in all those localities where it has become naturalized, its favourite haunts are damp and low situations, extensive marshy districts reaching along "the shores of rivers and lakes, and of the sea, and especially in parts exposed to inundations." The observations of Dr. Huss lead to similar conclusions. He says: "On the coasts there is scarcely a family altogether free from its presence, old and young, rich and poor, native and emigrants alike, suffer from the worm." In passing inland the liability to become infected decreases, and eight or ten leagues from the coast, rivers or lakes, it almost ceases to be found. Those statements regarding the favoured situations where bothriocephali flourish being marshy soil, near lakes or sheets of water, are confirmed by the history of the case I wish to record.

When collating the antecedent history of individuals from whom bothriocephali were expelled, either here or in England, it will be noticed there is one striking feature almost invariably present—namely, they have either visited or resided in some continental locality where this worm is known to abound, and the presumption almost becomes a certainty that they must have obtained their parasite during their sojourn abroad. The exceptions to this rule are of extreme rarity; thus, of the six specimens that are preserved in the museum of the London College of Surgeons, one was

got from a native of Switzerland; another from a Russian attached to the Russian Embassy in London; a third from a person who had travelled in Switzerland; the fourth came from a native of Russia, who, after long residing in England, revisited his native land, and on his return brought back with him his parasite; the fifth happened in the practice of Dr. Gull; it was expelled from a little girl, who resided at Woolwich, and is the only case of the series where the worm can be considered of indigenous origin; the history of the sixth case is unrecorded. The example which fell under my own observation in April, 1867, was obtained from a gentleman long resident in Dublin; originally a native of Russian Poland, he may have acquired his parasite when resident in the marshy districts of that land, or have become its host whilst travelling afterwards through central Germany and the Baltic provinces, previous to settling here. Strange to state, until the joints were expelled which he brought me he never entertained the slighest suspicion of harbouring worms. There is a valuable paper of Dr. Cobbold's published in the Journal of the Linnean Society for November, 1867, which treats of the entozoa that infest the dog. When describing the bothriocephali, he states the difficulty that exists in determining the exact number of species that animal may harbour; still it is admitted that B. latus does occur both in man and in the dog. As proof of this fact, "one such cestoid may be seen in the museum of the Royal Veterinary College, and no doubt can be entertained that it belongs to this species." Unfortunately there is no clue given of the previous history of the animal; probably, like most human beings, it got the worm as a result of visiting the Continent. To complete the subject of the geographical distribution of this entozoon, it should be stated that it is unknown across the Atlantic, save when imported into America from Europe. Thus Weinland, in his essay on the tape worm of man, p. 59, asserts: "We have seen two specimens of the worm in this country (America); the first was expelled from a Swiss soon after his arrival; the second was from an Englishman in Richmond (Va.), who had, perhaps, travelled in Switzerland, and, like the German anatomist and physiologist, Sœmmering, and many other travellers, brought away with him this vade mecum from the land of William Tell. We have not yet seen a specimen which came from an American, nor has Professor Leidy, of Philadelphia, as he informs us by letter."

The life history, and mode of propagation of this entozoon,

before it finds entrance into the human being, will require additional research to elucidate its mysteries; too many of the statements on the subject are repetitions of clever guess work and surmises. Dr. Knoch, of St. Petersburg, believed he had succeeded in rearing this worm in dogs by the direct experiment of feeding them with its embryos; but more careful experiments by Leuckart establish clearly the necessity of some "intermediary bearer," as is now well known to happen with our ordinary tape worm. (See Dr. Cobbold's paper in the Journal of the Linnean Society.) Carl Vogt considered it was propagated by using sewage waters that contained its ova; this is less probable than the theory widely circulated and having many corroborative facts to allege in its support—namely, that it becomes transmitted through the agency of fish used for human food. Dr. Huss, who adopts this opinion, would ascribe it to the use of salmon. So far as Ireland is concerned, either this cannot be true or else our salmon enjoy a special and enviable exception from a parasitic pest that must be very prevalent in other countries. Again, Kuchenmeister has supported the view that its scolex passes its existence in some low marshy or aquatic animal, and finds admission within our bodies suspended in the water or adhering to raw vegetables; this is far from improbable, considering the present state of our knowledge of its wide distribution over numerous countries where marshes abound.

The patient from whom the present specimen was procured resided in a healthy district in Ireland far removed from the sea shore, though close to an extensive lake in one of our northern counties. The symptoms complained of were debility and impaired digestion, and though no reason was assigned for the supposition a conviction was expressed that the deranged state of health was depending on "worms." As I thought it possible ascarides might be present, a full dose of santonine was exhibited, which produced its well-known influence on vision, imparting to surrounding objects a green or yellow tint for a few days, but it failed to expel any worm. This negative result of administering santonine shows that it exercises no power over bothriocephalus, however potent and reliable it is for destroying ascaris lumbricoides. Two or three weeks after, a few detached fragments of tape worm, consisting of adhering joints, were forwarded to me immersed in spirit; these were so shrivelled and altered in appearance that it was impossible to do more than ascertain their cestoid character, and

also that they were quite unlike our ordinary tape worm. The patient, at my request, removed to town for treatment. A brisk aperient was directed and soft diet continued for twenty-four hours, after which a full dose of oil of male fern was taken, made into emulsion with yolk of egg, and flavoured by a few drops of essence of peppermint. In the course of three hours the worm was expelled dead, and quite perfect, for I obtained the head of the animal, with fourteen feet of adhering joints. It is needless to say that the recovery was satisfactory.

The host in this case was born in Ireland, and has always resided here, with a brief interval, about four years since, while at school for six months at a small town in Lincolnshire. It was impossible to ascertain when the worm took up its residence, and the history throws no light on the origin of the parasite. Kuchenmeister's observation of its preference for lake or marshy districts is supported by the patient's home being near a large lake of fresh water, and the temporary abode in Lincolnshire was on the borders of a county notorious for its fenny districts. Whether the patient obtained the animal in Ireland, or whilst at school in England, this undoubted example of "Russian," or, as it is often termed, "Swiss," tape worm, deserves to be considered of indigenous origin, and, therefore, "British." Ireland prides itself on being free from Ophidian reptiles; there is less truth in the oft-repeated statement that we have no toads, for a flourishing colony of true Natterjacks reside in a district in Kerry. Still I had rather record their extension over half the island in moderate quantity than establish our claim to the bothriocephalus latus. It is fortunate that the patient's history admits of a degree of ambiguity; and should any zealous naturalist desire to monopolize the parentage of this entozoon for the other side of the Channel, I would offer no objection, admitting they possess at least one other example of its attacking the human being, and another less decisive of its occurring in the lower animals to support their demand. I fear, however, the evidence afforded by the present case is too conclusive to permit our refusing it admission into the lists of the British fauna, though with a strong hope that it may continue conspicuous amongst our native entozoa by its exceptional rarity.

ART. XVI.—*On Scarlatina during Pregnancy and the Puerperal State.* By S. L. HARDY, M.D., F.R.C.S.I.; President of the Dublin Obstetrical Society; Physician, Accoucheur, and Lecturer on Midwifery and Diseases of Women and Children at Doctor Steevens' Hospital.

SCARLATINA occurring during the puerperal state is so dangerous a complication that it is with justice we dread it, and take every means to guard our patients against its invasion. Not only in the puerperal condition, but during all the months of pregnancy, more particularly when approaching the full term, precautions are very desirable. How difficult it frequently is to prevent mothers running all risks during utero-gestation, when their children are the subjects of scarlatina, frequent instances are not wanting to prove. They sometimes escape under circumstances of great exposure. On other occasions, when strictly using precautions, they contract the complaint. Several instances, as examples of both those remarks, lately came under my observation during the last few months, when scarlatina prevailed in and about Dublin.

CASE I.—The mother of several children, in her eighth month of pregnancy, resided in her house (one of the worst ventilated, and not particularly clean), where her eldest daughter, aged fifteen years, had died of scarlatina, and four children besides had the complaint. I was first called to visit the eldest child when attacked, but did not again see her, as she was under the care of others. When next I was sent for I found a girl, aged eleven years, who five weeks previously had scarlatina, in violent convulsions. There was œdema of the face, slow, laboured pulse, and dark albuminous urine.

A boy, aged twelve years, was also œdematous, and his urine dark and albuminous. His pupils were largely dilated, and perfectly insensible to light. He was quite blind.

A second younger boy had an abscess in the parotid region.

Under the treatment adopted all those children perfectly recovered. The mother, as already mentioned, was in the same house with those children when I saw them. She went to another residence until they had recovered. She then returned for her confinement, which took place in about a month after, and escaped the disease.

Case II.—A female child, aged ten years, became ill. Scarlatina eruption came fully out over all the body. On being called to see her I found her mother, who was expecting her confinement, in close attendance upon her, and her sister, aged four years, playing close by her bed. The latter I had taken out of the house; but the mother remained, using, however, the precautions of seldom going into the room, and the free use of disinfectants. Within a month after, this lady was confined, and had no untoward symptom. The child, who had been sent out of the house, also escaped the disease.

It was doubtful whether in this instance the mother had scarlatina formerly, but the young child never had.

Case III.—A lady, in her second month of pregnancy, was in close attendance upon her child in severe scarlatina. She felt very ill, and contracted the disease herself. She passed favourably through its stages, but was very long in regaining her strength. The symptom upon which she depended as enabling her to consider herself pregnant was a bitter taste in the mouth. It continued during her attack of scarlatina. Pregnancy progressed steadily, and at the full term delivery was safely completed.

The next two cases are instances in which the patients were attacked with scarlatina at some short time after parturition.

Case IV.—In the month of February last a lady, who was expecting to be confined of her ninth child, had a very severe attack of influenza, which confined her altogether to her bed. It was necessary to support her strength in every manner by the liberal use of wine, beef tea, &c.

She had made considerable amendment when her confinement came on. Delivery was got over without any untoward symptom to mother or child. A wet nurse was in readiness for the infant, so that the mother's strength was not taxed in the respect of nursing, a task for which she was quite unequal.

The recovery for the first fortnight progressed slowly but steadily, the nourishing treatment being all along carefully continued. At the end of this time pain of a neuralgic character was complained of in the right leg below the knee. There was no swelling, nor blush of the limb, and in the course of a few days it got well. She was soon able to walk about her drawing-room, but did not leave the house.

When just two months confined she had an attack of fever, which developed a very copious eruption of scarlatina. Sore throat was complained of, and the tonsils and fauces appeared swollen and inflamed.

Although up to this she had been progressing favourably, yet the strength was by no means restored to its usual state. It was necessary to give wine and nourishment very freely.

The disease passed through its stages, and desquamation followed without interruption, and before the end of a month the skin was looking clear and healthy. Exercise was taken by walking through the drawing-room.

She now went, for change of air, to reside several miles in the country. On the second day she drove out in an open carriage. She felt cold, became very feverish, got sore throat, and was covered all over with a scarlet eruption. I was called to see her. She had a decided scarlatina eruption. This attack passed through the stages, as the former one, but more mildly, and distinct desquamation followed.

I have met with scarlatina recurring the second time in the same individual on several occasions, but never within so short a period from the first invasion, as in this case; exactly one month had expired from the first to the second seizure. Some years ago, when attending a female child of five years old in scarlatina, her brother, who had it one year previously, came into the room. He had scarlatina a year before. He had it again on this occasion with his sister.

The last case I shall mention is one in which scarlatina came on very soon after delivery.

Case V.—Mrs. B. came to Dublin for her second confinement, which took place the 19th of October last (1867). She was at all times delicate, but the very little strength she had was sadly taxed by close attendance upon her mother, who had paralysis, and required constant attention. A few days before her confinement she was attacked with influenza, and was so reduced by it that I had great fears for her delivery. This, however, was got over, and she went on favourably until the fourth day, when the pulse became extremely rapid (140), with high fever. As the breasts had become very hard, I hoped the fever was caused by the coming of milk, but shortly after scarlatina eruption appeared all over the body and extremities.

During the first few days there was very great distress, with delirium. The fever then gradually subsided, and recovery progressed most favourably. Throughout the attack the lochial discharge continued of a florid colour, but was of most offensive odour, requiring great attention from the nurse. Extreme debility was so prominent from the time of this patient having influenza that wine and nourishment had to be freely and regularly administered. There was some disposition to diarrhea, which was easily restrained by chalk mixture.

It is satisfactory to be able to state that the children, who were sent to the country, escaped the disease.

Soon after her return to the country this lady wrote to me, saying she felt so remarkably well she could scarcely believe she had been so very ill when in Dublin. I have since had a letter from her reporting a miscarriage in the second month.

This case bears out what has been remarked by Dr. M'Clintock in his paper on "Scarlatina Complicating Childbed"—the secretion of milk and the lochial discharges, with the involution of the uterus and vaginal contraction, all went on without interference. The fetor of the lochia was the only thing which required particular attention, as already mentioned.

It was a fortunate circumstance that even so many as three days had elapsed after delivery before scarlatina manifested itself, thus giving the patient a better chance of recovery, as is well exemplified in Dr. Halahan's report, read before the Dublin Obstetrical Society, and published in this Journal, No. 71. By referring to this report it will be seen that recoveries from the disease diminish the nearer the date of attack to that of parturition. The same was observed in the Vienna Lying-in Hospital in an epidemic of scarlatina in 1799. It was owing to this circumstance that recovery in the present case may very much be attributed, together with the large amount of wine and nourishment. Coming on after the depression of influenza, and the shock of delivery in a constitution naturally weak, as the patient's was, but for the very free use of stimulants the result, I greatly fear, must have been unfavourable.

It is worthy of remark that in the Cases IV. and V., where scarlatina attacked the patients after delivery, neither of them had in any way, which could be known, been exposed to contagion. They were confined to the house for a considerable time, owing to their having influenza previous to their confinement. They were

extremely debilitated, and required the same liberal supply of stimulating treatment. Case IV. is particularly interesting as affording a well-marked instance of the recurrence of scarlatina in the short space of one month from the first seizure of the disease, being in both attacks distinctly marked with all its characteristic features.

ART. XVII.—*The Epidemic of Cholera at Malta in* 1865. By ED. J. BUTLER, L.R.C.S.I., Assistant-Surgeon R.N.

IN giving an account of the epidemic of cholera which visited the island of Malta in the year 1865, the points necessary to be noticed, in the first instance, are, the origin of the disease, and the circumstances connected with its conveyance to Malta.

From the report of Dr. Aubert Roche on the cholera of the Isthmus of Suez, it appears that the disease was rife at Djedda and Mecca in May, '65. Many thousands of pilgrims were collected there, and the dead lay unburied in the streets.

On the 19th of the same month an English steamer, from Djedda, arrived at Suez with 1,500 Hadjis or pilgrims, a number of dead having been thrown overboard on the passage.

At Suez the first cases occurred on the 21st May. Between that date and the 1st June several thousands of pilgrims passed from Suez to Alexandria, cholera being amongst them on their route. The first case among the inhabitants of Alexandria occurred on the 2nd June. From this time the number of cases increased till the invasion was complete at that place.

On the 31st May a steamer arrived at Malta after five days' passage from Alexandria, with 235 pilgrims; 61 of these were landed, and the rest went on to Tunis. Three Hadjis had died on the passage from Alexandria, but there being no medical officer on board, the causes of death were uncertain. From the 1st to the 9th June seven steamers arrived, with 237 pilgrims, and several other vessels brought passengers from Alexandria, all of which had *pratique*. On the 14th June the Government issued an order that all vessels coming from Alexandria after that date should undergo seven days' quarantine.

On the evening of the 14th three vessels arrived from Alexandria, and were, of course, subjected to the established quarantine. These vessels conveyed 176 passengers to Malta, who were landed at the

Lazaretto to serve their period of quarantine. Forty-eight of these passengers were Hadjis. One was reported to have died on the voyage of "bowel complaint."

Between the 14th and 20th June, 178 persons, chiefly Maltese labourers, who had been employed at Alexandria, and had left it on account of the pestilence, arrived from the latter place and were quartered in the quarantine establishment. Thus, on the 20th June 254 persons were in quarantine at the Lazaretto.

The first case among the inhabitants of Malta occurred on the evening of the 20th in a building distant about 200 yards from the Lazaretto, where a detachment of the Royal Artillery and another of the 4th Regiment were quartered. A daughter of one of the gunners, aged nine and a-half years, was attacked on that evening and died at noon on the following day. Up to the 29th three more cases occurred in the same quarters, two of which proved fatal.

On the night of the 27th a man who had been employed that day whitewashing some rooms in the building where the cases broke out among the Royal Artillery, was attacked at his home in Casal Attard, and died on the 29th.

The detachments of artillery and 4th Regiment, which had suffered, were removed on the 30th June to Floriana, a district on the opposite side of Quarantine Harbour, close to the town of Valetta.

On the 1st July five cases occurred among the women of these detachments at their quarters in Floriana. By the 10th July the disease had spread to all the districts adjoining the harbours, and in a few weeks there was cholera in every village of the island.

The above-mentioned facts concerning the origin and progress of the disease are taken, in the main, from a pamphlet published by the Superintendent of Police at Malta.

These facts show clearly that the disease originated at Mecca, and was conveyed thence directly to the island. Breaking out among the thousands of pilgrims collected at Mecca for devotion, it committed ravages amongst them to an extent easily understood when the habits, &c., of that class of people are considered.

These pilgrims, making their way homeward to the northern parts of Africa, brought with them, as shown above, the cholera poison, diffusing it on their route in places and among people eminently suited for its reception. We then have these Hadjis and other persons taking passage by sea, calling at Malta, and many of them remaining there. There is evidence that some of them died on the

sea voyage; and, subsequent to the arrival of the rest, the first cases among the dwellers at Malta occur in persons living close to the place where these carriers of disease were housed. The instances of the detachment of troops stationed near the Lazaretto being attacked with cholera, and conveying it with them to their new quarters at Floriana, and of the man who, after working all day at the same place, died of the disease at his home some miles distant, seem to point clearly to the quarantine establishment as the centre of diffusion of the imported pestilence.

During the period of the epidemic I was serving in H.M.S Hibernia, the guardship at Malta; and though no case of cholera occurred on board, I had ample opportunity of witnessing its ravages on shore. The ship was moored in Dockyard Creek, between the crowded, populous towns of Isola and Vittoriosa. In these towns the dockyard workmen and their families lived, and also the families of men belonging to the fleet. The latter, when attacked, applied to the ship for assistance. I also attended the cases that occurred among the dockyard people and the poor Maltese in the neighbourhood, with the staff surgeon of the yard in whose charge they were.

The features of the disease, as I saw them, presented nothing peculiar for remark. All the symptoms ascribed to Asiatic cholera were well marked, though they were not combined in every case. In some there was very little vomiting and purging; in others these symptoms were excessive, and most distressing, and accompanied by great thirst, but the extent of these bore no ratio to the fatality of an attack. Cramps were not severe, but in every case restless tossing about was most marked, rendering the application of local remedies almost useless.

The choleraic face and skin were always observed, and there was total suppression of urine in every case. As a rule premonitory diarrhea ushered in an attack, but in most cases it was so slight, and of such short duration, as to be overlooked by the patient and neglected, and in the majority of cases the stage of collapse had come on when advice was sought. The latter stage generally lasted from eight to eighteen hours. During the whole period of the epidemic, diarrhea was very prevalent, few persons having escaped an attack, more or less severe; and to such an extent was this the case, that I am strongly of opinion that the choleraic poison influenced every one, but worked its fatal effects only in those in some way predisposed to it, bringing on collapse in persons of low vital

powers. With few exceptions the mortality was confined to the badly fed, badly housed population, and in the cases which occurred in persons of a better class, there may have been a predisposition to the disease arising from constitutional causes, or such predisposition may have been induced by a system of abstinence, or otherwise adopted through fear.

While the essential nature of the cholera poison is a mystery, I don't think it is too much to say that it is capable of producing diarrhœa, with or without cramps, in one individual, and fatal collapse in another, varying in its effects according to the constitution of the person exposed to it.

Although the disease prevailed in particular localities, where it was multiplied by discharges, &c., which were not or could not be effectually removed; yet isolated cases occurred which could hardly be attributed to immediate infection, but seemed to be the result of the diffusion of the poison through the atmosphere. In the naval hospital, a man who had been a patient there for some time, and was in an advanced stage of phthisis, died of cholera. This hospital, which is a model establishment as regards good hygienic conditions, stands isolated and on high ground, and communication from without is limited. In this case no such cause for attack could be assigned as exposure to emanations from infected persons, or drinking water contaminated by cholera discharges.

Judging from this and similar cases, it may be inferred that the choleraic poison once imported by men and ships, besides being infectious through discharges and emanations from the sick, is capable of being transmitted by the atmosphere, and producing fatal effects at considerable distances, independent of any other means of communication. This fact, of course, is not a new one, but I mention it as it bears on the subject of quarantine, and especially on quarantine as carried out at Malta.

The Lazaretto, or quarantine establishment, is situated on an island in a most central place, having the populous towns of Valetta, Floriana, and Pietro, on one side, with a strip of harbour intervening, and on the other side Sliema, with large barracks close by. In this place were crowded all the people who came from Alexandria after the middle of June; and it would be strange, indeed, if the disease, with its well-known infectious and diffusive properties, thus introduced into the midst of a thickly-populated district, should not spread. As a matter of course it did so, and, under the circumstances, the details observed by the

authorities in enforcing a strict quarantine were superfluous and almost ridiculous. All the minor rules of quarantine were rigidly carried out by the police after the disease was well settled in the island.

I do not for a moment attempt to depreciate the utmost strictness in enforcing the rules of quarantine; however, when all the important conditions of quarantine are neglected, I cannot look on such strictness in details as otherwise than absurd. Surely it is an outrage on common sense, as applied to sanitary matters, to subject to quarantine a boatman who picks up a bottle thrown from a ship undergoing quarantine with no sickness on board, because that bottle has a paper label, and yet permit hundreds of Hadjis from the seat of pestilence, in all their native filth—most excellent vehicles of infection—to be huddled like sheep in a building occupying a central position in a healthy community.

In fact, the Lazaretto can hardly be considered a quarantine establishment at all, but rather as a favourable place for collecting persons from infected quarters for the purpose of spreading disease among the people. There are places in the island some miles distant from the chief towns, with good anchorage for ships, and there are islands adjoining with similar advantages. If at any of these there were establishments for the separation of passengers arriving from infected places, a rigid system of quarantine might be effectual, and the inhabitants would have the advantage of distance in resisting the invasion of a pestilence.

The intentions of the police authorities in endeavouring to check the spread of the disease from house to house were praiseworthy; but they were of little use, and naturally so.

The crowded state of the houses, the narrowness of the streets, and bad drainage contributed to render their efforts of no avail. In many houses in the old parts of the town there are communications with the sewers in the entrance hall, covered only by a grating, and in such houses there is little use in fumigating a room where a person died of cholera. Of late years the sewerage of Malta has been improved, but it is still defective.

Taking into consideration all the circumstances connected with the origin and spread of the cholera epidemic in question, we may dismiss the case of the disease spreading by water contamination or other means.

The period of the invasion was the natural period of drought in

Malta. The temperature was very high. Many of the poor were thrown out of employment, and therefore lost the means of subsistence; and the natives were decidedly panic-stricken. Coupling these influences with the effects of overcrowded dwellings in narrow, filthy streets, it is no wonder that the disease had many victims. In fact, putting together all the conditions—moral, social, and hygienic—of a people like the Maltese, when visited by an epidemic, it is only a matter of surprise that the population under such circumstances is not decimated.

Laudable efforts were made by the Governor and private individuals to assist the poor and those who were out of employment. Soup of very good quality was served out to those who had no means of subsistence, and dispensaries were established where medicines could be obtained gratis.

Not a single case occurred on board the "Hibernia," with her compliment of fifty marines, and the same number of Maltese sailors, besides supernumeraries, although the ship was moored close to infected places. Our immunity from sickness may, I think, be attributed partly to the excellent hygienic conditions in which the men were placed, and partly to general precautions. The ventilation in a large three-decker for so small a number of men was of course good. The men's diet was ample and wholesome, as is always the case in men-of-war when in harbour; and there was no panic. Leave was granted as usual, and no restriction was placed on the Maltese portion of the crew, as regards visiting their families. But a man who had gone on shore was not allowed to return to the ship for a considerable time, if it was known that a case of cholera occurred in his family. The men were not allowed to buy fruit in the usual way from the boatmen attending the ship; not that fruit was considered injurious, but because the men usually observed no moderation in eating fruit, and no discrimination as to its ripeness or otherwise. They were particularly enjoined to report themselves on feeling the slightest indisposition, and this order they strictly observed.

Many cases of bowel affection were treated during the epidemic, most of them not sufficiently severe to incapacitate a man for duty, but all were treated promptly.

As regards the treatment of cholera when it assumes its worst form I can say very little. Of the cases I saw a few only recovered when the stools became rice-watery, and one only where the symptoms of collapse were well marked. All the means advocated were

used to support the sinking powers. Brandy and most of the stimulants in the Pharmacopeia were given, and their effects watched, and external applications of the same nature were always assiduously adopted, but with no good result. This treatment seemed to check the vomiting and purging and to relieve cramps, but did not affect the nervous system sufficiently to bring about restoration of the suspended functions. However the poison may be introduced into the system, whether it primarily enters the blood and subsequently, more or less quickly, influences the nervous system, or whether it first directly affects the nerves of organic life, I look on the symptoms in the stage of collapse, when most cases are seen, as entirely those of nervous prostration and poisoning, indicating a line of treatment directed to that state.

Giving physic, therefore, with a view of restoring suspended secretions in organs whose functions are arrested in consequence of suspended innervation, is, I fancy, useless, especially when the most powerful medicines seem to have none of their usual therapeutic effects in these cases. I have no doubt of the efficiency of medicine and remedial agents in the first stage of the disease, in the stage of choleraic diarrhea; but in the epidemic in question this stage was so mild, and of such short duration, as not to attract much notice till collapse came on, when remedies were of very little use. Although some think that choleraic diarrhea is not a stage of cholera at all, yet an attack of diarrhea during an epidemic of cholera is a suspicious circumstance, and should not be neglected; and though I think the poison is capable of producing milder effects in some than in others, according to their constitutional powers of resistance, still I should be sorry to neglect these milder effects, lest their continuance should so far debilitate as to predispose to a more severe attack. In fact every indisposition during an epidemic of cholera should be treated promptly. Treatment during the stage of collapse can only, I think, be successful when directed to the support of the sinking powers, thereby sustaining nature, while an effort is made to eliminate the poison.

My experience of the disease is not sufficiently large to enable me to enter more fully into the subject, but I have seen enough of it to be convinced that much may be done by precautionary measures, and very little by treatment.

ART. XVIII.—*The Oxide of Nitrogen as an Anesthetic Agent.* By CHARLES KIDD, Sackville-street, London, M.D., M.R.C.S., London; Associate Member Surgical Society, Ireland; Physician Royal Westminster Dispensary, &c.

IN continuing the study of anesthetics, their special mode of action, the nature of fatal accidents from chloroform, ether, and such like agents of that class (on all which various papers by the author appear in this Journal) attention has been particularly drawn in the present year to the administration of a comparatively new anesthetic or partially asphyxiating remedy now much used in London—the nitrogen protoxide, or so-called "laughing gas," which still continues to be exhibited very extensively as a substitute for chloroform.

The very great alleged advantages of this "gas" as an anesthetic have been agitating the profession of late, and very extensive experiments on the lower animals have been instituted to test it.

The author, with a wide experience of chloroform administration, has thought it well to explain, in a few brief observations, how these two agents appear to him to differ; and in this differentiation, what are the physiological advantages, what the good qualities of this "gas," how it affects the blood, and so on. These remarks profess to be purely clinical rather than speculative or chemical. Added to these purely physiological or clinical suggestions he offers a new theory of the *modus operandi* of the gas as well as some practical remarks on vomiting, so common under chloroform, but absent under this anesthetic.

Having noted with much care, and studied with attention the physiological and one or two commonplace practical results of the nitrogen protoxide administration, these remarks are offered as a sequel to his other papers on anesthetics, as well as to elicit discussion on the general theory of anesthesia so induced.

One of the more obvious phenomena or differences between this gas and chloroform is its influence on the muscles of the entire body, which are not relaxed, but stimulated by the protoxide. Else in many of the more violent surgical operations with this gas on the jaw, where a powerful wedge is placed to keep the jaws asunder, one could not have failed before now to find dislocation of the jaw, if the masseters and other muscles or tissues were relaxed, as they are under ether or chloroform.

A very remarkable "twitching" of the muscles is one of the early diagnostic marks of the patient or subject for surgical operation, being fully under the anesthetic influence of the protoxide It is entirely different from the struggle under chloroform.

This twitching, according to the views of the author, is caused by dark venous blood irritating the source of muscular power, for all the muscles at one side of the body, in some cases, will be irritated all and severally, and not on the opposite side.

It is not necessary, perhaps, to give any general description of the usual mode of administration of this nitrous oxide gas; suffice it to say, that the procedure is almost identical with the administration of chloroform in hospitals, as familiar to all surgeons. The gas must be pure, and unmixed with air. The patient is found to inhale it quite as readily as chloroform; but the effect to the bystanders is curiously different, nay alarming, when this gas is inhaled. The anesthesia is complete in about sixty seconds.

In place of the calm, gradual sleep under chloroform, the face unaltered, especially in children and women, the same patients, under this gas, are violently agitated, as if in a state of suffocation; the expression of the face is suddenly and entirely altered.

The patients, as a rule, though it is styled "laughing gas," do not laugh, but rather go off into a curiously half epileptic condition, with the invariable twitching or spasm of the muscles, and then total insensibility.

One sees, now and again, very violent apparent distress in some one or two of ten cases under laughing gas, the face of the patient assuming a purple, ghastly, and frightfully death-like aspect; the eyeballs bulging forward from muscular contraction; the expression of the face is like that of a person suffocated. All this is attended with what appears dangerous epileptic, or epileptoid, convulsions, or, possibly, well-marked tetanic spasm or tension. The patient, while under the "gas," to the relatives or friends, and those about him, wears, it must be confessed, an appearance repulsive in the extreme, as if in the fell grasp of some ghoul, or overwhelming death-struggle! Yet struggle and convulsion will all cease in a moment just as suddenly on admission of atmospheric air. The grasp, as of some monster, on the muscles relaxes; the repulsive appearance of the face, the spasm and tension, the tetanic bending of the body, the convulsions epileptoid or epileptic, the suffocation, the eyes "without speculation," the bulging eyeballs, the ghastly,

purple, livid aspect of face, with the other symptoms, all suddenly vanish. The patient, perhaps, smiles, and assures you he has felt nothing at all either of the surgical operation or the struggle. No doubt much of this struggle has been automatic or reflex, but to the friends of the patient it is very horrifying.

In a few instances the violence of the struggle has been so prolonged or great, attended with such marked or startling signs of deadly suffocation, that it was feared at the moment the blood vessels of the brain might give way, especially the arteries, and precaution was taken accordingly.

Yet, still, from the depression of the pulse, so observable under this struggle or full action of the gas, one is inclined to think that there is stagnation in the pulmonary capillaries, and more pressure on the venous system than the arterial. The pulse, as a rule, is suddenly depressed under full action of this gas.

The nitrogen protoxide, when inhaled, as a general rule, is very uniform, and, perhaps, safe in its results; though, by an extended experience, the author has seen exceptions to the general rule of its entire or uniform harmlessness. In one case of a female patient at the Dental Hospital very great alarm was felt by the surgeon for a short time, as, in addition to these signs of struggle, or the asphyxiant stage, the breathing almost at once suddenly stopped, the whole expression of the face became death-like, or fixed as if in marble. Three teeth were extracted passively, or without sign of suffering; the usual bleeding from the gums had stopped. A state like catalepsy came on, but the pulse, which the author carefully marked, continued good all through the period. Vigorous measures to restore breathing were had recourse to, else this patient would probably have died. In a similar case in America the patient never recovered; the cork wedge had got into the pharynx in the struggle!

In another female patient, on the contrary, where, without any anesthetic or gas, a curious syncope or fainting fit was induced by fear of the pain of tooth extraction, attended, with utmost exhaustion, at one part of the hospital; the woman was brought, pale and faint, to the operating theatre, where the gas is administered, from another part of the hospital. Few persons would have given such a patient chloroform, if fatal accidents under that agent be due to cardiac syncope. The author watched this patient with painful attention. There was unmistakable syncope present, but the gas, at the first inspiration, restored her to life and spirits.

What, then, is the nature of this physiological state, these fears and idiosyncrasy?

It has not yet been proved with sufficient precision what exact amount of carbonic gas is given off from the lungs during the four or five minutes such a patient is inhaling the nitrogen protoxide for a surgical operation; or, in other words, how much carbonic acid gas is retained in the blood.

If ordinary asphyxia, with absence of oxygen and accumulation of carbonic acid, be marked, as it is, by stagnation of blood in the pulmonary capillaries, the quantity of blood oxygenized returns to the heart gradually diminishing, its condition becoming more and more venous, till at last the pulmonary circulation ceases or stops—if a warm-blooded mammal can be reduced to a state of hybernation, when the waste of its tissues diminishes so as to require very little carbonic acid gas to be given off—if living animals have been frozen till apparently dead, and brought to life again, this waste of tissues partially suspended, and oxygenation in abeyance, we have in all such cases an analogous state. We know that frogs, caterpillars, snakes, fishes, &c., have been thus frozen till they chinked on glass like bits of ice, and yet were restored to life, so to speak, several days after, on being thawed. This shows, also, that the ordinary process of oxygenation of the blood may be stopped, and yet a low form of life like that under the asphyxia of this "gas" be carried on.

If we now ask what are the advantages of this deadly agent in surgery or medicine, the answer will be in some form as this. The chief advantages of the nitrogen protoxide over chloroform or ether, as far as they have yet appeared, are—(1st), the quickness of action of the gas; (2nd), the slight after effects; but specially, and above all (3rd), the absence of vomiting, which latter, under chloroform (especially when carelessly administered), is sometimes—for instance in ovariotomy or hernia, or eye operations—most troublesome, if not the immediate cause of death!

The author has observed one case, however, out of half a dozen already reported, where vomiting or violent retching occurred under the "gas"—that of a delicate female for a tooth extraction; but, as a general or practical rule now observed in some 800 cases, vomiting is absent. This arises from the gas not irritating the pharynx, œsophagus, and laryngeal nerves.

Then as to the quickness of action of the protoxide. It must in contrast be said the balloons—so useless: *omne ignotum pro magni-*

fico, as Mr. Simon says of cholera theories: the complex valves, &c., give a glamour of fear and terror to chloroform that it does not deserve, all which prevents country surgeons from giving it a fair trial. Fear invites all evils. "Quæ metuant lingunt," says Lavater. It is only wise or fair to place in contrast with this the alarming appearance of the patient, and the excessively cumbrous gasometers, tubes, valves, &c., which it is necessary, especially in private practice, to carry about with the surgeon in cases where a few drops of plain chloroform would, in all probability, if skilfully administered, act quite as well.

A very large fixed gasometer, capable of containing 106 gallons of the nitrogen-protoxide, has been recently, however, placed in the operating theatre of the London Dental Hospital; and even portable small gasometers for single cases, not unlike the ordinary "Hutchinson's Spirometer," have been manufactured for private practice!

How does this gas differ from chloroform?

The appearance of the patient under chloroform narcosis; the healthy appearance of the scarlet blood of such chloroform patient in the arterial jet at surgical operations, and such like phenomena in experiments with chloroform on the lower animals; the comparative manageableness or slowness of the operation of chloroform contrasted with the general effect so rapid and alarming of the protoxide; the quickness of action, the dark venous character of the arterial blood, the livid, cold, death-like appearance of the surface of the skin under this gas, &c., all tend to show how differently these two agents influence the system.

We have here under this gas rather a modified form of asphyxia, with its insensibility to pain, yet freedom from danger! Probably because the process of asphyxia or hybernation, so to term it, may be stopped at once by permitting air into the lungs in case of danger, and then all anxiety ceases.

Bichât demonstrated, even in his day, that such a form of hybernation or sleep, with insensibility or modified asphyxia, could be imitated in animals, and was tolerated in cold-blooded animals, especially with cold surface, by passing, as an experiment, the venous blood of such animals into its adjacent artery, or by freezing animals, so common in Spallanzani's experiments.

The nitrous or protoxide "gas" has been administered for a few small surgical cases, such as excision of condylomata, opening of abscesses, amputation of toes, where it is now beginning to be

admitted that chloroform has proved more dangerous than in large capital operations. In these special surgical instances one would say—the gas has at once alarmed but satisfied the operating surgeon.

It has helped to magnify the evils of chloroform—rather chloroform in inexperienced hands. The advantages and disadvantages are about equally balanced; but as a physiological study, the gas is very full of interest.

The essential *modus operandi* or action, according to the author, is to afford a passive stimulus to the larger bronchial tubes, while the lower hybernating process of respiration goes on in the pulmonary capillaries. This dark blood, circulating in the systemic arteries, producing this curiously leaden death-like appearance of the patient, and anesthesia.

It is possible the venous condition produced by the gas might hereafter be available in blood-poison cases, snake bites, and such like, where it is advisable to alter the crasis of the blood suddenly; or, in the treatment of aneurism, to favour coagulation in the sac. It might help the degeneration of some malignant tumours into fat; but its use in general surgery must be very limited, on account of its cumbrousness.

Facts such as the following show further the *modus operandi* of the gas:—Several patients have had administered to them the same eight gallons of the protoxide repeated over and over again, three, four, or more times, the same gas inhaled, exhaled, and then inhaled again. Still the gas has not lost any of its sensible properties of rendering the patient insensible. This tends to indicate that this gas is not absorbed or decomposed by the blood in the lung or pulmonary capillaries, but affords a kind of artificial stimulus to the organs of respiration, while a low form of life, as in hybernating animals, is carried on in the capillaries, or air cells.

The author is inclined to believe that this is rather the *modus operandi* than that usually believed—viz., that the gas saturates the blood, and is given again off unchanged; and for this reason, that any given quantity of seven or eight gallons of the gas has not had time enough thus to mix with the blood, nor are there any traces of the effect of the gas on the blood. As in similar administration of chloroform, vapour or ether, and notably of carbonic oxide, all which act on the blood corpuscles, carbonic oxide breaking up the corpuscles entirely, and ether or chloroform, though not acting so powerfully, being still perceptible in the blood, and easily

re-distilled from the blood where thus administered—phenomena all absent as regards this nitrous oxide gas.

The quickness of recovery from the state of asphyxia under the gas, the rapidity with which arterial blood again diffuses itself over the face and neck of the patient, is very wonderful. The arterialization of the blood, on admission of air, is instantaneous. The mode of life of hybernating animals, or of the *fœtus in utero*, or in cyanosis, where the two sides of the heart communicate, will afford at least some loose analogous instances of this condition of life carried on with dark blood in the arteries. In the asphyxia under this gas, when air is permitted to the patient, the recovery is as if a spring were relaxed, the red blood rushing at once through the vessels.

Respiration, it need hardly be said, is a function, in a physiological point of view, of a double nature, related on one side to the brain and spinal chord, to which it owes the mechanical action of the lungs, intercostal muscles, diaphragm, &c.; and on the other side to the heart, which is the medium of transit of the blood to be arterialized or oxygenized; and so we have two forms of death in accidents from anesthetics.

In fact, the relation existing between brain and lungs in birds, mammiferous reptiles, fishes, &c., is reciprocal, showing, too, how little we can judge of such accidents in them and the human subject.

Finally, as to the practical value of the protoxide!

As to the absence of vomiting, so desirable, as once believed in eye operations, especially in cataract cases, it is now found in practice that a slight amount of vomiting does not do as much harm, as theoretically supposed, in eye cases. Nor is vomiting very frequent under chloroform, where the surgeon or administrator is familiar with certain methods of preventing vomiting, which arises from irritation of the pharynx, and is probably not "cerebral." In eye operations under the protoxide there is rather dangerous bulging forward of the eye, caused by the twitching of the muscles of the eyeball. This alone may always render the protoxide of questionable desirableness or superiority as an anesthetic in eye operations. The eye is also found to roll and bulge in a curiously unsteady manner under operation, so that although there be no vomiting there is reason to fear there would be much risk to the vitreous humour or iris in cataract cases, from the protoxide and from this irregular action of the muscles.

Nor is the ether spray at all advisable as a local anesthetic in freezing the fluids of the eye. The ether spray, in fact, is entirely without value in tooth-drawing, or eye operations, or large amputations; so that the practical surgeon in all the London hospitals at present is driven back to the adoption of plain chloroform, as at once the simplest anesthetic, and the one best understood by students, nurses, and patients. The ether spray congelation, in fact, is generally discarded in dentistry and eye operations.

The nitrogen protoxide has already been used in London this year in nearly a thousand tooth-drawing operations, where it has given much satisfaction by this quickness of its action, and this entire relief from pain and safety, though condemned at first, in favour of the "spray."

The author of the present communication has no doubt whatever that the relief from pain and general satisfaction would be quite as great if chloroform had taken the place of the nitrogen protoxide in these cases, and if in place of many and abounding popular prejudices against chloroform, which are encouraged too much in our popular literature to favour voltaic narcotism, or methylene or patent "mixtures," the same study and interest could be secured in dental hospitals for chloroform or ether as for this "gas," we should have less reason to be dissatisfied with the older anesthetics, and have less fatal accidents from anesthetics in general.

These chloroform accidents, the author still believes, as first stated *in extenso*, in the "Transactions of the British Association," are due in a large measure to idiosyncrasy or sudden fear on the part of the patient, rather than prolonged exhaustion or narcosis under the chloroform.

These chloroform accidents are sudden, as if from spasm of the glottis and pulmonary apparatus, rather than deep coma or cardiac syncope.

Nearly all the death accidents (now numbering about 300) from chloroform have been in strong, sensitive individuals, during or before very trivial operations, from fear of coming pain, showing how unwise it is to exaggerate this fear of chloroform in favour of a gas with so few advantages.

The practical medical man, in a word, may have, in tedious long operations like ovariotomy, or in tediously long midwifery cases, when patients struggle almost as if under this "gas," being often livid, comatose, or stertorous (very probably from absence of air), he may have a condition of asphyxia running parallel with the

condition of anesthesia, but not identical, but still no danger so long as the respiratory muscles are acting with vigour under the chloroform.

The more immediate cause of danger, as supposed by Dr. Brown-Séquard, being a spasm or reflex irritation sent suddenly in some patients with such idiosyncrasy from the lung to the heart, or, possibly, from the glottis and laryngeal nerves. Perhaps old Melancthon was not so wrong after all: "*Mœstitia cor quasi percussum tremit et languescitre*, fear strikes the heart, makes it tremble, and the black blood under the ribs on the left side makes these convulsions so fatal."

The inhalation of the nitrous gas is not attended with any appreciable change of pulse at the wrist till the patient shall have been fully under it; then it becomes suddenly weak, as the dark blood pervades, probably, the heart tissues; whilst, on the contrary, under chloroform, the pulse rises and becomes larger as the anesthesia progresses. This large pulse, as Dr. Brown-Séquard suggested to the author, is not a stimulant, but rather a paralytic action of the coats of the artery. Nor does the pulse sink in ovariotomy, as theoretically supposed, by a synthesis of disease from experiments on animals with voltaic narcotism, or chloromethyl in laboratories; the pulse rises in ovariotomy under chloroform.

The advocates of the coagulation of the blood from escape of ammonia or voltaic narcotism profess themselves no experience of chloroform or nitrous oxide in actual practice; hence many errors.

The author, in conclusion, is of opinion, that it is indeed rather as a physiological study as to experience of such agents in the human subject that the adoption of this anesthetic at present is so worthy of the attention of the profession.

The surgical experiments have been witnessed in London with great and increasing interest; and if we could but ascertain with exactitude, independently of the chemical theory of the synthesis of disease or diffusion of gases, what exact amount of carbonic acid gas is given off during the period of the asphyxia stage under the protoxide, or what precise quantity of carbonic acid, in other words, is retained in the blood, we might then be in a position to explain the *modus operandi* of the new gas in a more satisfactory manner.

As a physiological study, these experiments in London lend no little corroborative proof to the views already published by the

author—namely, that in surgical practice, whatever *a priori* reasoning may say to the contrary, the surgeon, in the use of chloroform or such anesthetics, may have aggravated stertor, and a condition almost like coma, in the patient on the operating table; but it is not so dangerous as sudden spasm!

If the cardiac syncope theory, in fine, were true, no one would be justified in administering chloroform at all.

The nitrogen protoxide too, though condemned hastily, has now been given in America, France, and England, in some thirty thousand cases. It indicates that experiments in animals with the "gas" are only "part of the truth," when brought to bear on the idiosyncrasies or fears of hospital patients. In a word, the condition of the system under this "gas" explains much that was wanting as to whether asphyxia is so dangerous as the advocates of complex inhalers, to prevent cardiac exhaustion from more than three per cent. of vapour, had imagined. Chloroform, as once said of antimony by the good old fathers of the profession, "is like Scanderberg's sword, strong or weak—a poison or a great benefit, as it is used"—a worthy medicine, if applied simply. While this "gas," from which already two deaths come to us from America, with its alleged advantages, does not seem entirely as great as other revolutions, political or journalistic, of the present Autumn, and only an indifferent substitute for the old fashioned—chloroform.

ART. XIX.—*On Caries of the Spine and its Treatment.* By WILLIAM A. ELLIOTT, F.R.C.S.I.; Surgeon to the Whitworth Hospital, Drumcondra; Member of Council R.C.S.I.

FROM a number of cases of caries of the spine which have come under my observation, I select the following one, as being not only an excellent example of the obscurity in which the symptoms of this disease are frequently involved, but also as proving the good result to be derived from a mode of treatment which I have been in the habit of employing for many years, and which I purpose particularly to describe in this paper.

On the 30th April, 1866, I was requested to visit Master R. H., aged five years and three months, a most intelligent child, with clear, delicate skin, brown hair, and very dark eyes.

Upon examination I found the little patient very much emaciated

and his strength greatly prostrated, with haggard and painful expression of countenance. Pulse 120, small and compressible. Tongue comparatively clear and moist. Bowels generally constipated. Appetite capricious, and the quantity of food daily taken but trifling. He complained of pain upon the slightest bodily movement, which was not referable to any particular part, but extended generally over the parietes of the abdomen and thorax.

The upper and lower extremities were greatly wasted. The former he moved with freedom, but when asked to draw the lower limbs upwards, and then to extend them, these motions were accomplished slowly and deliberately, more as if the child were afraid of producing pain than as if unable to perform the act.

It was impossible to place or support the patient either in the erect or sitting postures without causing pain.

When turned upon his face I perceived a sharp angular projection corresponding to the spinous processes of the fifth and sixth dorsal vertebræ, pressure upon which produced no pain. The back had a peculiar rounded appearance. The head and shoulders drooped considerably forwards, and produced in front a corresponding concavity of the chest. The particulars of the patient's case were given to me by his parents as follows:—

When the child was about the age of three years the first symptoms observed were languor, accompanied by general uneasiness and stiffness, which were soon followed by pain upon any attempt at moving or turning in his bed. He became cross and irritable, had very disturbed rest at night, and awoke in the morning unrefreshed and weary. His appetite gradually declined, and it was with difficulty he could be prevailed upon to take nourishment sufficient to sustain him.

The patient was kept in the recumbent position for about fifteen months, yet with a slow and gradual increase of all his symptoms and sufferings, when he began to refer the chief seat of pain (which became very acute and occurred at short intervals) to the abdominal region, particularly the lower part, from whence, after some weeks, it extended upwards towards the parietes of the thorax, and subsequently backwards in the direction of the diseased vertebræ. From the commencement of the child's illness he was constantly under medical surveillance, but particularly so during the year previous to my visiting him, as his symptoms had become much more urgent. His mother, who had sole charge of him through the entire of his illness, represented her child as being in constant pain

and misery, chiefly at night, when frequently she was compelled to remain at his bedside for some hours.

As the principal seat of pain was referred to the abdomen, the medical attendants directed their attention particularly to that region for nearly twelve months. Anodyne stupes and poultices were frequently applied, and small anodyne draughts given occasionally at night when required to alleviate pain, but without producing any permanent relief. The constitution was supported by means of tonics, and by every description of diet that could be suggested. The bowels were relieved occasionally by enemata, which, however, produced so much discomfort to the child that they had to be discontinued.

Treatment.—From the foregoing history of this case the first indication in the treatment was obviously to alleviate the patient's suffering.

I therefore ordered a well-fitting corset to be made, stiffened with whalebone, which was speedily applied, and after it was worn for a few hours the child derived much relief. The body being thus gently supported, he was enabled to turn and move in his bed with more freedom and comfort. I also prescribed the following medicine:—

℞. Muriat. morphiæ, gr. i.
Syrupi Limonis, ʒi.

A tea spoonful to be given at night, and repeated at intervals of three or four hours if suffering from pain or restlessness.

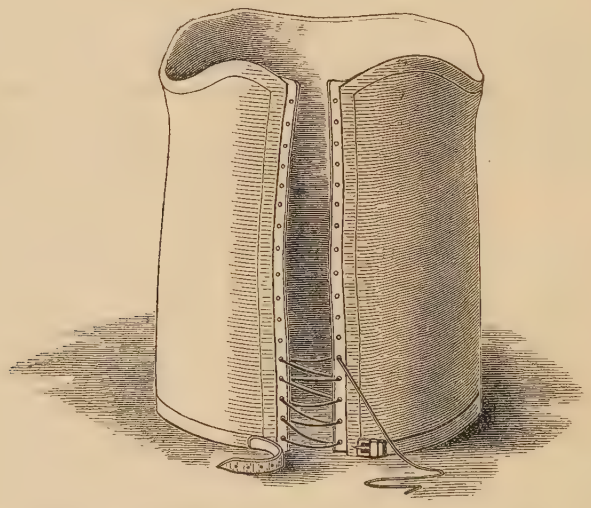
℞. Vini Ferri.
,, Rhei aa. ʒi.

A dessert spoonful to be given occasionally should the bowels be constipated.

This mode of treatment was steadily pursued for three weeks with most decided benefit. The pain gradually diminished; patient's sleep became more undisturbed and refreshing, and there was a corresponding improvement in his general health and strength. Notwithstanding this amendment there still existed an amount of lingering pain, which, although much diminished, became at intervals sharp and distressing. The corset having ceased to afford the requisite amount of steadiness to the body, I applied the stronger support which I am in the habit of using, the description of which and mode of application I shall briefly state.

The support consists of thick leather (known as tanned but not

curried), which before using must be well soaked in tepid water; by this process it is rendered soft and pliant. The leather may then be cut so as nearly to close in the front, and made to extend from the axillæ downwards over the cristæ ilii. It is then to be applied firmly round the body by means of a long circular bandage, so as to embrace the parts accurately. It may then be left on for some hours, until the leather has become quite hard and dry, when it may be removed, and will be found to have taken the exact shape of the body. This mould should then be more accurately cut so as to make it fit evenly, and subsequently lined with chamois leather and made to lace up the front, with strap and buckle, to secure it round the pelvis, as represented in the accompanying figure.



This simple appliance having been perfected I placed it upon the patient; in a few hours afterwards the pain became very slight, and at the expiration of less than three weeks it had totally subsided, and he could then sleep comfortably in whatever position he wished to assume.

For three months the child was kept as much as possible in the recumbent posture, and finding his general health and strength much improved I applied strips of the emplastum plumbi (spread upon thick sheepskin) closely to either side of the angular projection, for the purpose of making moderate pressure upon the prominent parts. This was effected by means of the leather

support, which was worn by day and by night, and never removed except for the purposes of ablution. It now became almost impossible to make the patient observe any particular position, and with this returning strength was evinced the greatest desire to assume the erect posture. I therefore allowed him to use crutches, upon which he was able to move gently about the room. I have nothing important to state respecting the treatment of this case for the last five months. It consisted merely in strict observance of the management which I have already described, and which was carefully carried out under my observation.

I adopted no local application of iodine, or counter irritation of any description. My attention was directed to the improvement of the patient's health, and, as far as possible, to enforce an observance of the recumbent posture.

I frequently visited the patient for the purpose of adjusting the strips of plaster, and making alterations in the leather support, which it was important to attend to according as the spine underwent alteration in its shape. This was simply done by damping the leather with water, and re-applying it by means of a bandage, so as to accommodate it to, and keep it in closer proximity with the spine.

At the expiration of eight months from the period of my first seeing the patient, a most interesting and important improvement had taken place in his symptoms, both locally and constitutionally. The sharp angular projection which formerly existed had become gradually more obtuse, until ultimately it presented merely a curved outline.

The following dates will mark the intervals of time at which important changes took place during the treatment, and my notes, which were taken at each period, will explain the progress of the case:—

1st August, 1866 (being three months from the period of my first seeing patient).—He was able to move about a little on crutches.

1st January, 1867.—Visited him this day. His general health and strength are greatly improved. He walks about (aided by crutches) with much more ease, and is able to take somewhat more exercise; shape of spinal column much improved.

1st May, 1867.—Health still improving. He can walk about without crutches, but ordered that he should not be allowed to do so.

March, 1868.—Patient is now able to walk about with perfect ease with the leather support (which he has constantly worn) without the aid of crutches, and his amusement is that of throwing and kicking a ball about the room. Upon removing the support he moved about with almost the same amount of ease and comfort as when he had worn it. His general health improved, and the entire muscular system better developed, particularly the lower extremities, which have become comparatively well developed, and have assumed a healthy tonic condition.

Caries of the spine is a disease which has engaged the anxious consideration of most practical surgeons. The frequency with which it is brought under our notice, and the difficulties attending the curative treatment, are such as to recommend the subject to the particular attention of the profession.

Little has been appended to our pathological knowledge of this affection since the writings of the late celebrated surgeon, Percival Pott, to whose elaborate research we are indebted for the first description of this disease, with the importance of which he was fully impressed, and has thus graphically alluded to it as an ailment—

> "In an infant, most melancholy to see;
> In an adult, most miserable to endure."

The treatment of caries, in whatever part of the spinal column the disease may be seated, will generally be found necessarily to consist of constitutional, local, and mechanical means, varying according to the health and condition of the patient, and the stage at which the disease may have arrived. The constitutional treatment should be generally of a tonic character, the indications for carrying it out are comparatively simple, and may be regulated according to circumstances. The local and mechanical treatments are attended with somewhat more difficulty; and respecting these there has, and still does exist, some difference of opinion.

We usually find this disease either resulting from or accompanied by a debilitated state of the system. Yet in the majority of instances it is met with in patients of strumous diathesis. It is difficult to limit the period of life at which this affection may invade the system. I have met with it at different ages, varying from infants of a few months old to persons of nearly forty-five years. Whatever the age of the patient may be, the indications for our treatment will be found alike in all, requiring, however,

modification according to the age and particular condition of the individual.

Pott considered this disease as strumous, and he strongly advocated and adopted the use of issues, and recommended not only that they should be kept open, but that the discharge from them should be copious and long-continued.

Sir Benjamin Brodie states that caries of the spine usually occurs in those who are either originally of a weak constitution, or whose bodily powers have become diminished under the influence of some previous ailment, and recommends issues to be applied either by means of caustic or the actual cautery, which treatment should be accompanied by absolute rest, all movement of the carious vertebræ being avoided. In the later years of his practice, however, he to a great extent abandoned the use of issues, and placed his chief reliance on rest and constitutional treatment.

The late Surgeon Abraham Collis, in his observations on the treatment of caries of the cervical vertebræ, recommends the use of issues, and, in his usual clear and practical style, gives the following opinion of their action:—"Caustic issues do well at first, acting immediately with benefit, but after this it is not of much service, unless you renew it, or irritate its surface twice in the week. I therefore do not think much good derived from the constant discharge, but that more is to be expected from the repeated irritation."

Sir Astley Cooper, in his lectures on this subject, has thus expressed his opinion respecting local irritation:—"Blisters, setons, and issues are commonly employed, but they do more harm than good by the irritation which they excite in the constitution." But, as a curative measure, he adds: "The means on which you should chiefly rely are rest, and the recumbent posture."

Having devoted a considerable amount of attention to this subject, and having carefully tested the various modes of treatment which have been suggested by eminent authorities, I have seen but little, if any, benefit resulting from issues or counter irritation, except when adopted in the incipient stage of the disease, before the tissues have undergone structural alteration, and before the constitution has become debilitated under the wasting influence of the disease.

In the early stage of the affection, I have inserted issues by means of caustic potash, and have witnessed most satisfactory results from them. Whether the benefit should be attributed to the powerful counter irritant action of the caustic, or to the

discharge which it subsequently produced, I cannot positively state, but my impression is in favour of the former.

In the more advanced stages of the disease, when we find considerable angular projection of the spinous processes, or in the still more formidable progress of the ailment—*i.e.*, when symptomatic abscess has formed—local irritation can avail nothing. We must, then, rely upon keeping the diseased parts as much as possible in a state of quietude.

In whatever situation the abscess may present itself, when fluctuation can be easily felt near the surface, and before the skin has become thin and pervaded with a blush of redness, I have always adopted the safe and simple mode recommended by Abernethy, of giving exit to the matter through a valvular opening made by a sharp, strong, and rather broad lancet, the point of which, if smeared with oil, will enter painlessly and freely into the sac. If gentle pressure be steadily made with the hand over the surface of the abscess during the operation, and as long as the matter continues to flow, no entrance of air need be apprehended. When the opening has been closed, a small piece of dry lint should be placed over the wound, and kept in situ with adhesive plaster. A bandage should then be applied round the part so as to keep the parietes of the sac as much as possible in apposition. These constitute all the precautionary measures which I have found necessary.

The great advantages which this mode of operation possesses are its simplicity, safety, and exclusion of air from the sac. I have repeatedly performed it, even as often as five or six times in the same individual, and have never yet met with any evil consequence to result from it.

Whatever differences of opinion may exist respecting the local treatment of this disease, all surgeons are unanimous with regard to the necessity of directing attention to the general health of the patient, and of preventing, by every possible means, any motion of the diseased vertebræ. The maintenance of that state of quietude, which even during sleep is so essential to the recovery of patients labouring under this affection, is a difficulty with which we are familiar, and which we have found hard to overcome.

I have seen many nicely-made and ingeniously contrived instruments used for this purpose, but they seemed signally to fail in fulfilling the necessary indications. I must acknowledge that I have never met with any instrument or contrivance which, in my

experience, has so fully answered the purpose as the leather support which I have described. The practical advantages to be derived from its use may be summed up as follows:—

1st.—From the accuracy with which it can be made to fit the body, combined with its lightness and strength it will be found to afford comfortable and substantial support, and it will prevent motion in the affected parts, even during sleep. In the erect or sitting postures it will tend to relieve the diseased vertebræ from the weight and pressure of the superincumbent parts of the body.

2nd.—Local treatment, when necessary, can easily be conducted during its use by simply making apertures in the leather, wherever they may be required.

The following abstract of a case of cervical caries, already published (in greater detail) in the *Dublin Medical Press and Circular*, will more fully exemplify the advantages to be derived from the mode of treatment which I have suggested:—

Margaret Lynch, aged seven years, was admitted into the Whitworth Hospital, Drumcondra, on the 29th of April, 1856. The child, who was badly nourished and emaciated, presented the following appearances:—The head (as exhibited in Fig. 1) had fallen completely to the left side, with an inclination forwards.

Fig. 1.

The right side of the face was turned upwards, and was much

congested from impeded circulation. The cheek rested upon the left side of the chest, and advanced so far downwards and forwards as to reach within about two inches of the nipple. The chin had passed the mesial line of the thorax, and advanced as far as the junction of the middle with the sternal third of the right clavicle.

The posterior aspect of the patient (represented in Fig. 2) exhibits the head as thrown to the left side, and resting upon the top of the shoulder. The spinal curvature, with its convexity

Fig. 2.

looking towards the right side, occupied the entire of the cervical region, although, to the best of my judgment, I could only localize the disease as existing in the third, fourth, and fifth cervical vertebræ.

When about the age of six years, whilst playing roughly with her sister, the child received a severe twist in the neck, which was immediately followed by faintness; and afterwards she complained of stiffness and pain in the part, the pain being greatly increased upon the slightest movement of the head or neck.

She suffered, at intervals of about three months, from inflammatory attacks, each being followed by a more gradual inclination of the head and neck to the left side.

The principal symptom she complained of was a constant aching pain in the upper part of the neck, increased by making pressure

upon the vertex and along the spinous processes, but greatly aggravated by the slightest attempt to rotate the head and neck.

In the recumbent posture she seemed to rest with comparative ease; but when asked to sit up the effort was made by first firmly grasping the head with both hands, and then the act was accomplished with no small amount of difficulty.

In the erect posture the child rested her head upon the left shoulder; but when desired to raise the head she could only do so to a very trifling extent, say to half an inch or three quarters, and this position could only be maintained for a few seconds.

When asked to walk, she instinctively raised the top of the shoulder, and placed it against the ear and side of the head. An amount of support was thus afforded, which enabled her to move slowly and cautiously about.

The treatment adopted consisted of constitutional, local, and mechanical agents, viz.:—She was ordered full and generous diet; iron combined with quinine, varying at intervals with other tonics, and cod-liver oil at night.

Counter irritation was constantly kept up in the neighbourhood of the diseased vertebræ by means of small blisters, alternately, when the parts were healed, with applications of tincture of iodine.

The child was strictly kept to her bed, with the head and shoulders slightly elevated. This course was steadily pursued for six weeks, when a visible improvement had taken place in her general health, accompanied with almost complete subsidence of pain in the neck.

The case having thus far satisfactorily progressed, and, fortunately, without any formation of abscess, I ventured upon the gradual restoration of the head and neck to their normal positions by adopting the following means:—

I placed a soft but firm pad, three-quarters of an inch in thickness, between the maxilla and the chest (which was the maximum extent to which the parts admitted of separation). This pad was very gradually increased in thickness, until the head became so far elevated as to admit of a collar made of leather, one inch in height, to be so applied as to encircle the entire neck, which was worn by day and night.

The child became accustomed to the use of this support after three or four days, when I allowed her to get up and walk about the ward. Of this permission she gladly availed herself, and seemed to derive much comfort from the collar, which was raised from time

to time at the left side, and under the chin, by means of strips of thick chamois leather, pasted one over the other upon the upper edge of the collar, until the head and neck were brought to the position represented in Fig. 3.

Fig. 3.

The head and neck having been restored to their normal positions, and the child's health being much improved, I gave permission for her removal from the hospital at the latter end of December, 1856 (being eight months from the time of her admission), with directions to have the collar kept constantly on.

In three weeks after the patient's discharge from hospital she presented herself at the dispensary, when I was disappointed at finding her general health very much impaired; she seemed weak and languid, and had become much thinner. Her constitution had suffered considerably from want of care and suitable nourishment, with which her parents were, in all likelihood, unable to supply her. She was, therefore, re-admitted on the 15th of January, 1857, and kept in hospital until the 20th of June following, when she was discharged cured.

I have had frequent opportunities of seeing Margaret Lynch since the above date. In July, 1867, I examined her, and made the following notes of her case:—

This little girl is much altered in appearance; she has grown strong, her figure well developed, and her general health good. There is some amount of rigidity in the neck, accompanied by deep-seated thickening of parts commencing from about the third

to the fifth or sixth vertebra, which indicates that anchylosis to a greater or less extent has taken place, with some apparent shortening of the neck.

The motions of the head and neck are, in a very trifling degree, impeded; she can fully bend the head forwards. Lateral inclination at both sides is in some measure limited; she can throw the head sufficiently far backwards, as to enable her to look almost fully and freely upwards, without any compensatory movements in the dorsal or lumbar regions.

I may fairly say, however, that close observation is necessary to detect any existing difference from the normal motions of the cervical region.

The cases which, in my experience, have been successfully treated, according to the foregoing system, have occurred in children between the age of three and ten years, in whom I have found the head and neck thrown into various positions—viz., laterally and forwards, with torsion of the neck; laterally, with different degrees of inclination; forwards, with the chin resting upon the sternum; and backwards, with convexity of the spine anteriorly. This latter form of the disease I have found much more intractable in its management than any of the former.

In each case of recovery no symptomatic abscess existed. I have attempted this mode of treatment even in patients who were suffering from purulent discharges, but soon desisted, finding that all such interference was fruitless, and productive rather of evil than good results. They were however persons of eminently strumous diathesis, and consequently unpromising subjects for any mode of treatment.

We cannot expect that each case of recovery can be perfect and unaccompanied with deviation from the normal formation of the neck. In Margaret Lynch's case the disease occurred in an extremely aggravated form; and although her recovery was unattended with deformity, other patients, with less formidable symptoms, have recovered with slight malposition of the neck, evidently resulting from absorption of bones and possibly of intervertebral substances.

We find it difficult in spinal caries to define the exact extent of the disease, and what structure has been the primary seat of inflammatory action. It may have its origin in the intervertebral substances, or in the cancellous tissue of the vertebræ, which latter may be considered the strumous form of the disease, and most likely to be followed by the formation of matter. But, as the disease advances, both structures may become implicated.

The direction towards which the head and neck will become inclined (should the disease not be arrested) will be determined by that part in which the morbid action exists. To this situation the head will invariably be found to lean.

It may be suggested, and it occurred to my mind at first, the prudence of interfering by mechanical means in restoring the shape of the part by raising the head and neck, and thus keeping apart the inflamed and ulcerated surfaces of bone and intervertebral substance. Such interference might seem a positive obstacle to the formation of anchylosis, and somewhat at variance with the opinions of systematic writers upon this subject. Yet experience justifies me in stating that whilst the curative process of anchylosis is progressing, the restoration of parts to the normal position may contemporaneously be conducted with the utmost safety and benefit to the patient. When caries occurs in any part of the spinal column it is invariably accompanied with a debilitated condition of the general system; therefore it is manifestly important to attend strictly to hygienic treatment if we hope for successful results.

In caries and other affections of the neck attended with contractions, I have practically experienced the great utility of the leather collar to which I have already alluded. It forms an important mechanical adjunct to our treatment. When properly shaped the lower edge should be made to rest upon the sternum and clavicles, whilst the upper edge should, with equal accuracy, be adjusted and brought in contact with the inferior maxilla and occiput.

The indications fulfilled by this support are obvious, viz.:—

1°. Having fixed points for the collar to rest upon, the superincumbent weight of the head is thereby in a great degree removed from the inflamed and diseased tissues.

2°. Mobility of the parts is rendered greatly limited.

3°. The collar affords an amount of passive resistance to the action of the cervical muscles, the contraction of which must be attended by a closer approximation of the diseased and softened surfaces, thereby promoting a more rapid absorption of bone and intervertebral substance.

4°. There is no necessity for constant confinement in the recumbent posture. When the collar has been applied patients may be allowed occasionally to walk about and enjoy open air exercise, which is not the least important advantage to be derived from the mode of treatment which I have suggested.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

1. *Essai de Pneumatologie Médicale, Recherches Physiologiques, Cliniques et Therapeutiques sur les Gaz.* Par J. N. Demarquay, Chirurgien de la Maison Municipale de Santé et du Conseil d'état, &c. Paris: J. B. Bailliere et Fils. 1866. Pp. 861.

Essay on Medical Pneumatology. By J. N. Demarquay.

2. *The Action, Use, and Value of Oxygen in the Treatment of Various Diseases otherwise Incurable or very Intractable.* By S. B. Birch, M.D. London: John Churchill and Sons. 1868. Pp. 149.

M. Demarquay tells us, in his introduction, that the object of his essay is twofold—to describe those diseased conditions in which there is development or accumulation of gas, and to give an account of the therapeutic application of gases. He commenced his investigations some years ago in conjunction with M. Lecarte, pharmacien en chef to the hospital to which he is attached. They endeavoured to ascertain the chemical and physiological action of gases injected into the closed cavities and healthy tissues of animals, to observe the influence of gases on the repair of tendons divided by subcutaneous incisions, and on the healing of exposed wounds, and the results were published in *Les Archives Générales de Medicine* for 1859 and 1862. Subsequently M. Demarquay continued his investigations alone, and tells us, in this volume, the conclusions at which he arrived.

The first twenty-six pages are devoted to a review of the opinions which have from time to time been held as to the existence in the blood and use of oxygen, carbonic acid, and nitrogen. As to the first, after noticing the views of Dumas, Longet, Claude Bernard, and other physiologists, he finally gives his adhesion to

the following conclusions, which he quotes from an unpublished work on anemia, by M. G. Sée:—

"*A.* The corpuscles are the carriers both of the oxygen which exists in the blood in combination with iron, and of the oxygen which is present as active oxygen or ozone.

"*B.* Their diminution entails the following consequences:—

"1. A functional alteration in the organs which, as the muscles, use the largest quantity of oxygen for the performance of their functions.

"2. Sensibility is blunted.

"3. The nervous centres are disturbed.

"4. Temperature is lowered because combustion is less active.

"5. The respiratory functions are deeply disturbed, the necessity for breathing being great, and the gaseous exchanges imperfect.

"6. The innervation of the heart is disturbed."

Part of the carbonic acid in the blood exists in union with the protoxyde of iron, but part also is held by the serum: as Lavoisier maintained, the amount of oxygen absorbed is in excess of that which is required for the formation of the carbonic acid exhaled, the balance uniting with the hydrogen contained in the constituents of the blood to form water. In what form nitrogen exists in the blood remains unsettled, and contradictory accounts are given by the various experimenters who have sought to determine the effect of respiration on the nitrogen of the atmosphere. The conclusions, however, of Regnault and Reiset are now generally received. They found that while healthy animals subsisting on the food proper to them exhaled a very small quantity of nitrogen, animals deprived of food, or supplied with unsuitable aliment, or labouring under illness, absorbed a small quantity of nitrogen from the surrounding air; in other words, under normal conditions the blood draws its nitrogen from the processes going on within the organism.

The author then proceeds to consider the conditions under which gases have been found in blood-vessels, in the gastro-intestinal tract, in the cavities of the uterus and bladder, and in certain abscesses of the abdominal walls; and afterwards devotes above two hundred and fifty pages to the consideration of the various lesions which may give rise to general emphysema, and to the existence of air in the pleura, pericardium, peritoneum, tunica vaginalis, and in joints.

It was on account of the third portion of the book that we took it up with interest, and have read it with care. We think that gases may, perhaps, become valuable remedial agents, and we were, therefore, anxious to hear the results of an investigation into their therapeutical applications.

The first to which he directs attention is carbonic acid. He begins by giving us an historical *resumé* of the opinions which have been held as to its value by Von Helmont, Robert Boyle, Hales, Black, Cavendish, M'Bride, and others. He then devotes sixty pages to an examination of the physiological action of carbonic acid. He refers at length to the investigations of others, both in later years and in the last century, and details his own experiments, made first on animals, and subsequently on his pupils and himself, and finally sums up in the following conclusions:—

"1. Carbonic acid exerts on the surface of the body an action exciting in proportion to the delicacy and susceptibility of the skin. When persons are exposed to an atmosphere of it the genital regions are specially the seat of this action.

"2. Anesthesia of the skin, when produced, only occurred under the influence of a continuous jet played upon a very limited portion of the body.

"3. Its action, when locally applied to the organs of sense, the eye and ear, resembled its general effect; there was excitement, exalted sensibility, a nervous perturbation, all the phenomena being, as a general rule, transient.

"4. Given in the form of aerated waters and otherwise, its effect on the digestive organs was stimulating, and with this was associated slight neuro-vascular excitement.

"5. Injected into the veins of animals it is absorbed in great quantity and rapidly eliminated, if the operation be conducted with suitable precautions; if injected rapidly it acts mechanically, producing distension of the cavities of the heart, and death.

"6. Introduced into the system by the respiratory organs it does not produce the poisonous effects which have been attributed to it. An atmosphere composed of one part of carbonic acid gas to three or four of air or oxygen can be respired by the lower mammals for a considerable length of time without apparent inconvenience. In man it produces some disturbance, but only after it has been inhaled for a period longer than would be necessary for its use as a therapeutic agent. The appearances, when death has resulted in men or animals from immersion in carbonic acid, bear no resemblance to those which are met with when carbonic oxide has been breathed.

"7. Most of the accidents from charcoal burning, and from descending into vats which have been attributed to carbonic acid, were really caused by carbonic oxide, sulphuretted hydrogen, or alcoholic vapour.

"8. Carbonic acid is simply irrespirable. Respiration essentially consists of an exchange of gases. This exchange, in accordance with physical laws, can only take place between gases of different kinds; the respiration of pure carbonic acid, therefore, places an obstacle in the way of the pulmonary function, and produces asphyxia.

"9. In man it seems impossible to produce anesthesia by the inhalation of carbonic acid without danger of asphyxia."

Proceeding to the use of the gas in the treatment of disease, M. Demarquay begins with continued fevers, but his facts are entirely derived from the writings of M'Bride, Priestley, Hey of Leeds, Dobson, and other authors of the last century, who, attributing, in accordance with the pathology of their time, continued fevers to a species of putrefaction, and believing carbonic acid to be an antiseptic, gave it by the mouth in effervescing draughts, and injected it into the bowel, as they believed, with good effect.

The use of the gas in pulmonary complaints—in phthisis, and in asthma—next engages the author's attention; and here we confess to extreme disappointment at the discovery, that he had no observed facts of his own to give us on this subject either. Instead of these, he hazards the conjecture that the reputation which certain methods of treating phthisis have from time to time enjoyed, arose from their exposing the patients to an atmosphere containing an unusual amount of carbonic acid. In this way he explains the good effects produced by the treatment of a Spanish physician, who buried his unfortunate patients up to the throat in newly-dug earth for some hours daily, and the cures which are said to have followed residence in a byre. He gives us extracts from Percival and Dobson on the use of fixed air in pulmonary complaints, and quotes cases recorded by physicians practising at various mineral springs, which are rich in carbonic acid, on the efficacy of their waters.

Proceeding to the topical uses of the gas, he gives us again an historical account, quoting the opinions of Percival, Hey, and others. In 1859 he had himself arrived at the following conclusions:—

"1. Carbonic acid gas, injected under the skin, has no poisonous effect.

"2. It promotes the reparation of divided tendons, and the healing of subcutaneous wounds.

"3. Grangrenous ulcerations and diphtheretic sores healed rapidly under its use."

He envelopes the limb to which he wishes to apply it in a caoutchouc bag connected by a tube with a reservoir containing the gas, which is allowed to flow in upon the limb for four or six hours at a time. A feeling of heat and tingling is experienced, especially at the sore, the surface of which becomes injected and covered with exudation, while the surrounding skin is bathed in perspiration. He has confined its use to old and rebellious sores; but these, he says, clean rapidly under its use, assume a healthy colour, their edges sink down, and cicatrization begins. In open cancer of the mamma, the uterus, and other parts, he has found the gas a palliative of the utmost value. The day after its application, he says, discharge becomes less fetid and copious, pain is lessened, and even partial cicatrization has followed its use. In these cases the gas is applied as a douche three or four times daily for ten minutes at a time. Its application to the uterus has sometimes caused so much excitement that it had to be given up, but it never produced, in M. Demarquay's hands, the severe nervous symptoms which others have attributed to it. In thirty cases of rebellious sores of the lower extremities he used it with results which he considered satisfactory. He mentions having treated two ulcers of the tongue—one of them syphilitic—with gargles of Seltzer water, which contains a considerable quantity of the gas: they very soon became painless, and healed under its use. The waters of Nauheim are rich in carbonic acid, and he quotes M. Rotureau's account of their efficacy in deafness from chronic affections of the meatus auditorius, in keratitis, and other inflammations of the eyes, and in affections of the nasal fossæ.

Neuralgia and catarrhal affections both of the male and female bladder, he has treated with good effect by injections of the gas. On one ocasion, however, the bladder gave way, and the gas was effused into the peritoneal cavity without, he tells us, the least unpleasant consequences—a result we can hardly understand, however innocent his favourite remedy may be, we cannot conceive that the rent made in the coats of the organ would fail to permit the escape of urine; at all events, those who may feel disposed to try his treatment should, we think, do so with the utmost care. Douches of carbonic acid gas, and of eau de seltz, he has found

useful in amenorrhea and dysmenorrhea, and uterine catarrh; and he quotes for us the marvellous cures of these ailments, which have been published by the bath doctors at some of the German spas which are rich in the gas.

M. Demarquay next treats of oxygen. He first gives us an historical account of this gas, attaching much importance to the work of Beddoes. He considers that the results obtained by the use of the compressed air bath in the hands of Pravaz, Junod, and Bertin may be attributed in great part to the oxygen. Though the experiments of the physicians of the last century are wanting in precision, they nevertheless, he believes, justify the conclusion that oxygen is a powerful therapeutic agent. We must remember that without it the various tissue changes could not take place, and it is therefore likely to prove a valuable addition to our means of influencing disease. He believes it is possible to increase the oxidizing process in the body by exercise, by fresh air, by compressed air, or directly by the inhalation of oxygen. He caused dogs, on the front of whose chest he had established a sore, to inhale the gas, sometimes pure, and sometimes diluted with atmospheric air. Subsequently he administered it by inhalation to men on whose bodies there existed granulating ulcers. In both, he tells, he observed, after the inhalation had been continued for some minutes, a marked injection of the capillaries forming the granulations, a copious exudation of serum or plastic lymph, and, if the experiment were continued for twelve or thirteen minutes, ecchymosis or actual oozing of blood took place. Blood drawn from the femoral vein of one of the dogs during the inhalation preserved its ordinary temperature, and there was no elevation of temperature during the experiment. Injected into the cellular tissue and serous cavities of animals no ill effects were produced, and it was rapidly absorbed. Rabbits confined in an atmosphere of pure oxygen lived for a longer period than when confined in an equal volume of atmospheric air, but finally died, and as the reservoir was found still to contain a considerable quantity of oxygen, it was evident that their death was not due to their having exhausted it. After death there was extreme vascularity of the tissues, especially of the muscles, which were of a bright red colour. The blood in the veins preserved its venous hue, but became red with unusual rapidity when exposed to the air, and maintained its fluidity for an unusual length of time. He quotes the experiments of Beddoes, who found that animals which had

been made to breathe an atmosphere of oxygen bore immersion in water for a length of time, which caused the death of others which had been breathing ordinary air. M. Demarquay also injected oxygen into the veins of animals. If the injection was performed too rapidly it caused death just as when air enters veins; but if done gradually, it was absorbed, and open wounds underwent the same change which had been noticed when the gas was inhaled: no matter, however, what quantity of oxygen was injected no alteration in the colour of the venous blood ensued. When thrown into the vena portæ, the spleen became distended, of a brilliant red colour, and firm, though the other viscera retained their normal appearance. M. Demarquay has himself inhaled, and has administered to his pupils and patients, ten to thirty litres of the gas without any injurious consequence. The effects varied in different persons: a sensation of heat in the mouth, chest, and stomach was commonly experienced; the pulse became quicker and harder than natural; sometimes sweating took place, sometimes a feeling of intoxication, and other indications of disturbance in the nervous centres was produced; in some there was a desire for muscular exertion, and in nearly all there was increase of appetite. Altogether, the effects greatly resembled those of the compressed air bath, for which, therefore, he thinks the inhalation of oxygen may be substituted. He dwells on the necessity of seeing that the gas is pure. He develops it by heating chlorate of potass, which has been mixed with an equal weight of fine dry sand, and it is made to pass through milk of lime. From twenty to thirty litres may be used daily, half in the morning and half in the evening. The patient simply draws it from the reservoir through a tube, sufficient atmospheric air entering through the nose. During expiration he holds the tube firmly, and removes it from the mouth so that the expired air does not enter the reservoir. Dry oxygen he has found too irritating, and he therefore advises that water should be present in the reservoir. In anemia, where iron fails, he recommends oxygen. Trousseau has found it useful in asthma. M. Demarquay believes seizures may be averted by it. He does not advise its use in phthisis, except in the very early stage, when it may be useful in promoting appetite. In his own practice he says he has seen it produce excellent effects. In phthisical dyspepsia he has also known it useful, though more rarely in advanced cases. In dilatation of the bronchi, and in enlargements of the cervical and bronchial glands, he has seen it

do good. He figures a convenient apparatus made by M. Galante, for the inhalation of gases, which those who may feel disposed to try this mode of treatment would do well to procure. The same manufacturer has constructed muffs of vulcanized caoutchouc for the application of the gas to the limbs. Under its topical use M. Demarquay has seen the congestion surrounding senile gangrene, and the redness of chronic eczema, disappear, and unhealthy ulcers assume a healthy aspect. It is not so exciting to wounds as carbonic acid, but violent inflammatory action may be produced if it is continued for nine or ten hours. A hydrocele, after injection by oxygen, underwent a cure. Thrown into the bladder, the gas did no harm. The pains of senile gangrene were in one case lessened by the application of carbonic acid, and in another by that of oxygen; but in other cases no good resulted. In two cases in which the anterior and posterior tibials remained open, and the gangrene seemed due to disease of the capillaries, relief of pain, restoration of the capillary circulation, disappearance of the violet colour of the limb, and ultimate cure, resulted. The inhalation of fifteen to twenty litres of oxygen (twenty-six to thirty-five pints), pure or mixed, with an equal quantity of atmospheric air, night and morning, a little before meals, M. Demarquay has found very efficacious in restoring appetite and strength to anemic and dyspeptic patients under treatment for various surgical diseases, especially in those who, in spite of tonics and nourishment, were sinking after operations. He also speaks of its value in those who are liable to hemorrhages from diseased surfaces in the uterus or elsewhere, and in persons whose general health requires improvement preparatory to the performance of some operation. He has also used oxygen inhalations, along with its local application, in the treatment of rebellious and scrofulous sores, and quotes at length a case in which its use had been attended with the best results in syphilitic disease of the most intractable character. He found, however, that if administered in doses much larger than those he recommends, though the appetite became ravenous, the patients grew thin. In the anemia and dyspepsia of cancerous disease, and of maladies of the genito-urinary system, it has also proved in his hands useful. He quotes the opinion of Odier of Geneva, with which his experience coincides, who, writing in 1799, lauds the use of water, into which oxygen had been forced, in hysterical and melancholic affections, in tedious convalescence, in asthmatic cases, and as a dieuretic in dropsy with ividity and oppression.

To nitrogen the author devotes but a few pages. He found that recent wounds became painless when surrounded by an atmosphere of that gas; and the inflammatory process which results when atmospheric air is admitted, and still more actively when they are in contact with oxygen, failed to come on. He hopes, therefore, that the local application of nitrogen may moderate inflammatory reaction in wounds, and cause union by the first intention. Surrounding recent wounds with an atmosphere of hydrogen stopped all reparative action, apparently by producing turgescence of the veins. The inhalation of a mixture of four-fifths of hydrogen, with one-fifth of oxygen, appears to have proved successful in phthisical patients who were suffering from loss of sleep.

As to protoxide of nitrogen, which has, since the publication of M. Demarquay's book, attracted so much attention, he has no personal experience to furnish, but quotes the accounts given at the time of the experiments of Sir H. Davy; and this leads us, in conclusion, to express our regret that the author of the treatise before us has devoted so much of his book to rather wearisome historical accounts of the therapeutic agents of which he writes. Without wishing to detract from the merits of the philosophers of the last century, we cannot help thinking that a few carefully conducted experiments, made in the light of the knowledge of the present day, and with the appliances we possess, are of such incomparably greater value than their speculations, that the time spent by M. Demarquay on the literature of the subject might more profitably have been devoted to its experimental investigation.

Dr. Birch details thirty-one cases of various kinds of ill health in which he found oxygen useful. In acute inflammatory and febrile diseases, valvular lesions of the heart, diseases with increased fibrin in the blood, if accompanied by relative diminution of the other organic constituents, and deterioration of the red corpuscles, he considers oxygen useless or injurious, as well as in "that permanently lowered condition induced by long-continued, insidiously-undermining nervous debility (so well known to us all), which, having become almost a second nature, has incapacitated the system for 'making life' beyond such amount as is absolutely essential for the brief maintenance of Psyche in her terrestrial abode." With these exceptions, however, he seems to have found it of singular efficacy as a therapeutic agent. Strumous and cancerous diseases, inveterate

headaches, chronic neuralgia, and various other affections of the nervous system, congestive diseases of female life, chronic derangements of liver and spleen, atonic diseases of the heart, chronic bronchitis and congestion of the lungs, asthma and pulmonary consumption, have all in his hands acknowledged the remedial virtue of oxygen. But he says: "The diseases, *par excellence*, in which the gas has afforded me the most gratification are those attended with either local or general venous congestions—a preponderance of the venous over the arterial, and torpidity of the capillary circulation." In most of the cases quoted he limited himself to oxygen gas, but generally employs other suitable remedies. Oxygenated water, when really well made, as by the process patented by Barth, ozonified oil, which was recommended by the late Dr. Theophilus Thompson, and the oxygenated bread made by Mr. Welton, of Grafton-street, London, he finds occasionally useful; but it is by inhalation that he usually administers oxygen. The following is his description of the methods of preparing and administering it which he recommends:—

"It appears to me that one of the best 'rough and ready' processes which can be recommended is the one originated, I believe, by Keller, and latterly modified by Fleitmann. A saturated (not milky) solution of chloride of lime, with a very small quantity of freshly-prepared peroxide of cobalt added, is to be subjected to a temperature of 176°; and the gas in tolerable purity comes off freely to the extent of 400 pints for each pound of the chloride. The protoxide can be added at the moment of use, quickly becoming peroxide. To extemporize an apparatus is obviously easy, and for administration a bladder can be readily attached, and some approach to accuracy thus attained in regulating the proportions of the oxygen and the atmospheric air.

"Mr. Robbins (Robbins and Co., Oxford-street), taking advantage of this process of Fleitmann, has ingeniously managed to combine and retain in dry weather the oxide of cobalt with the chloride of lime, ready for immediate use by simply adding *boiling* (so directed) water to the compound. This affords two advantages: first, the good quality of the chloride is ensured; and secondly, the trouble of making the clear saturated solution is avoided; while, with the simple inhaler devised by Dr. Beigel, the practitioner can administer oxygen at a distance from his residence, in a case of urgency, without the trouble of bulky and heavy apparatus."

"Having named the most ready means for the administration of oxygen by inhalation in cases of emergency and for limited periods, I must next draw attention to an older and more approved method which

has several decided advantages, and through which I have mainly gained my own experience of the value of oxygen in disease. I refer to the apparatus and condensed gas in iron bottles invented by Mr. Barth, of Long Acre, London. With the disadvantages of the bottles being rather liable without care to get out of order, and difficulty of easy conveyance at a moment's notice—at least in the country—there are the following great advantages:—1. The condensed gas is absolutely pure and devoid of taste and smell; and the large quantity of 120 pints is guaranteed in each bottle. 2. The apparatus is adapted for the most accurate and instantaneous measurement of due proportions of the oxygen and atmospheric air (a very important consideration, as I shall afterwards show); it is an excellent spirometer; and with it we can regulate with precision the patient's pulmonary movements, by a simple motion of the hand varying at will the pressure upon the lungs and the depth of each inhalation. As yet, I believe, nothing has been suggested equal in value to this apparatus with condensed gas, where prolonged employment of oxygen is required."

"*Undiluted* oxygen may be, and is, exceptionally useful; but, as a rule, it affords but little satisfaction, even if it does no harm. In desperate cases, as a last resource, I have tried the undiluted, after the gradually less-and-less diluted gas had failed. For one or two minutes it seemed to revive the patient; but the transient reaction has generally been followed by an immediate return and even increase of depression. It is necessary that the atoms of oxygen should be distributed through some medium; and atmospheric air is naturally selected as the best and most convenient, though nitrogen would almost equally subserve, and in some cases a medium of hydrogen (very carefully managed) affords a special advantage. The precise method of inhalation is highly important. In bad cases the inhalations (for a time, at least, at the outset of treatment) ought to be carefully watched by the practitioner. According to the special condition of the lungs, heart, and brain, &c., or the patient's physical weakness or possible nervousness, so ought the depth and vigour of the inspirations, and duration of each sitting, to be regulated. The diluted oxygen should be retained in the lungs for at least two seconds. A medium period is five to six seconds after an ordinary inspiration (say) from 70 to 200 cubic inches, according to pulmonary capacity. One minute's interval of ordinary respiration, at least should elapse between each artificial inspiration; and in some cases—either sensitive to its effects, or soon fatigued through debility—from two to four minutes' interval ought to take place. As a rule, one well-managed half to three quarters of an hour's sitting in the twenty-four hours is much more beneficial than short and repeated sittings; but of course there are exceptions.

"It is not desirable to inhale within an hour and a half after a good

meal, for obvious physical reasons, but it merits special notice that the renowned French physiologist, M. Claude Bernard, referring to the resistance to the absorption of oxygen being greatest during the act of digestion, attributes it to the superabundance of the hepatic saccharoid principle (*hepatine*, Pavy) forcibly propelled into the blood at that period. Debilitated and anemic subjects should never take oxygen after long fasting (except for a very few minutes, and when very much diluted); while the contrary applies to the plethoric and congested with plenty of reactive power, for *direct super-oxygenation* may here be received as the correct idea of the treatment with free doses, whenever ordinary oxygen cannot through physical impediments be sufficiently obtained from the air—moreover, Bernard and others have shown that the blood of animals while fasting absorbs the maximum of oxygen. The time to be occupied in inhaling a given quantity demands quite as much vigilance and judgment on the part of the medical attendant as the prescription of a dose. During the sitting all excitement should be prohibited; but after its completion active movements for a few minutes in the room or a little exercise in the open air is advantageous. Chilliness and cold feet must be guarded against, as far as possible, during the inhalations.

"In speaking of small doses, a range is implied of from two to twelve per cent. of the gas in a given amount of air. Large doses are signified by a *minimum* of twelve per cent. Nine to twelve pints of the pure gas, diluted with about seventy-five pints of air, may be stated as a fair medium dose; and the inhalation of this quantity should, *mutatis mutandis*, extend over a period of at least half an hour."

Dr. Birch is of opinion that the good effects of the inhalation of oxygen are not explicable, on the supposition, simply, that super-oxygenation of the blood or the tissues is thereby produced. He believes, rather, that the oxygen possesses a quasi-catalytic action, or, at least, enables ordinary atmospheric oxygen to be absorbed and combined more perfectly. Caution in the use of the remedy he found necessary, some persons being singularly susceptible to its influence; in them fulness in the head, faintness, and palpitation, were produced by very small doses.

SURGERY OF THE AMERICAN WAR.

1. *Catalogues of the Surgical, Medical, and Microscopical Sections of the Army Medical Museum.*

2. *Circular No.* 6.

3. *Circular No.* 7.

4. *Gunshot Wounds, and other Injuries of Nerves.* By Acting-Assistant-Surgeons Mitchell, Morehouse, and Kean.

5. *Annual Report of the Surgeon-General, U. S. A.*, 1867.

6. *Ninety Cases of Operation for Urinary Calculus.* By Paul F. Eve, M.D.

We have grouped a number of books and papers which have their origin in the late American war. The first three are of great importance and value. They are issued from the Surgeon-General's department. The catalogues form a very large volume of nearly 1,000 pages, illustrated with numerous woodcuts, and some lithographs. The references to preparations are not mere dry details of classification, but give, as all such catalogues should, some insight into the nature and history of the specimens. The labour and care bestowed on this catalogue must have been enormous. The museum of which it is the key must be of immense value in its special subjects. A very large proportion of the 5,000 surgical specimens would appear to be gunshot injuries of bone. For purposes of reference to this class of injuries the book is of value even to those who cannot consult the museum. The same remark applies in a lesser degree to the medical section, which is specially rich in specimens of intestines diseased by dysentery.

The microscopical section has no special connexion with the war. It contains a description of the apparatus used for photo-micography, which is valuable to those who go in for such pursuits, but which would not be understood without the accompanying illustrations. By the report for 1867 we find that the number of specimens in the museum, actually catalogued, amounted by that time to 8,542. The papers which are of special interest are Circulars 6 and 7.

Circular No. 6 is the joint work of Brevet Lieut.-Colonel George Otis, Surgeon, U.S. Volunteers, and Brevet Colonel J. J. Woodward, A.S., U.S.A.

These titles do honour not only to the individuals who bear them, but fully as much to the State which thus recognizes the service of non-combatant officers, and puts those who strive to heal at least not below those whose duty is too often to wound and to destroy.

This circular has already attained celebrity as a work of great practical value. It seems to have been compiled as a sample of what may yet be done towards a complete history of the war in its surgical and medical aspects. We use the term history in its broadest sense, so as to include in it not only full details of all the more important injuries and diseases incidental to the war, with numerous statistical tables, but also those practical and scientific results which may fairly be derived from them. As a work of condensation this circular is marvellous, and for clearness and practical value upon the special subject it is quite unsurpassed by any previous document of equal length with which we are acquainted.

We shall extract largely from its pages, more so than we should feel justified in doing in the case of books which can be obtained by every one who chooses. These state papers, although distributed with a liberality which is quite unsurpassed, can only be accessible, as a rule, to those who live under the shadow of some public library. We therefore feel that we shall only do what the American authorities desire by assisting to make their contents known in some degree to a wider circle of readers. We take this opportunity of calling attention to the handsome donation of photographs which has lately been made to the College of Surgeons from the American Museum. One hundred large-sized photographs of the most remarkable cases, neatly mounted on card board, and with the history of each case endorsed upon it, have been sent, we believe at the suggestion of a former pupil of the College of Surgeons.

Circular No. 6 gives a sketch of the results in time to be deduced from 202 General Hospitals, containing 136,894 beds. It comprises, in the surgical section:—

Special wounds and injuries, from 87,822 cases.
Surgical operations in 17,125 cases.
Medical Staff and Materia Chirurgica.

In the medical section there are numerous valuable tables and

diagrams, which it will not be possible to summarize, together with a few practical deductions from them.

In the microscopical section there is also a description of the means used for micro-photography, also some beautiful lithographs, plain and coloured.

This circular concludes with a chapter on hospital organization and construction.

Having said thus much in explanation we shall let the volume speak for itself:—

"*Gunshot Injuries of the Head.*—In this important class of injuries the utmost pains have been taken to secure completeness and accuracy in the records. The registers have been copied by experienced clerks, and have been supervised by a medical officer. Exclusive reliance has not been placed upon the field and hospital reports; but in a large proportion of cases, specific inquiries in regard to the extent and results of individual injuries have been made by letter.

"All, or nearly all, cases of gunshot injuries of the head that have been reported to the office from the commencement of the war to October 1st, 1864, have been entered on the records. They number 5,046, and have been recorded in two classes: first, the gunshot fractures and injuries of the cranium, including the perforating and penetrating and depressed fractures, the fractures without known depression, and the contusions of the skull resulting in lesions of the encephalon; and, secondly, the simple contusions and flesh wounds of the scalp.

"It is quite possible now to establish subdivisions in the first class; but to have attempted this heretofore would have been premature, and likely to produce confusion.

"In the first class 1,104 cases are recorded. Of 704 of them, of which the results have been ascertained, 505 died, and 199 recovered. In 107 of these terminated cases, the operation of trephining was performed, of which 60 died and 47 recovered. In 114 cases fragments of bone or of foreign substances were removed by the elevator or forceps, without the use of the trephine: and of these 61 died and 53 recovered. When operative procedures were instituted, the recoveries were 45·3 per cent. But it must be apprehended that this favourable exhibit will be materially modified when a larger number of results are ascertained, and that a great proportion of the field operations of trephining, in which the results are stated to be undetermined, were lost sight of, and terminated fatally. In the 483 cases treated by expectancy, the ratio of recovery is only 20·5 per cent. But the latter group of cases includes nearly all of the penetrating and perforating fractures, and it would be unwise to base on these figures an argument in favour of operative interference.

"The gunshot contusions and wounds of the scalp that have been entered on the records number 3,942, of which 103 terminated fatally. It is altogether probable that in all of these fatal cases some undiscovered injury was done to the cranium or its contents; or that the pericranium was removed, and death of bone ensued, with consecutive lesions of the encephalon. The histories of many of these cases are now under investigation. So far as ascertained, the fatal results have depended upon concussion or compression of the brain, or upon the formation of abscesses in the liver or lungs, in consequence of inflammation in the veins of the diploe. Compression has resulted either from extravasation of blood, or inflammation of the brain or its membranes, or from suppuration. The following is an example of a scalp wound, followed by inflammation of bone and meningitis:—

"Private Joseph R——, Co. E., 151st New York Vols., received, in a reconnaissance near the Rapidan, November 27th, 1863, a gunshot wound of the scalp. The nature of the missile was unknown. The patient was removed to Fairfax Seminary General Hospital, near Alexandria. There were no cerebral symptoms at the time of his admission, and it was hoped that the pericranium had escaped uninjured. He was up, and apparently well, on December 13th, 1863, when he was suddenly seized with convulsions, which were followed by coma. Surgeon D. P. Smith, U.S. Vols., laid bare the calvaria at the seat of injury, and finding the bone diseased applied the trephine. Matter was found immediately beneath the bone, and oozing from the diploe. It was thought expedient to make five perforations with the trephine, in order to remove the diseased bone and to give free exit to pus. Convulsions did not recur, but the comatose condition continued, and the case terminated fatally twelve hours after the operation. The autopsy revealed diffuse inflammation of the arachnoid and of the dura mater.

"The foregoing case illustrates the fallacy of Pott's views in relation to trephining for pus under the skull cap; and yet, under such circumstances, the best modern authorities advise the use of the trephine as affording the patient the only chance of recovery. The records attest how slight this chance is, and corroborate the observation of Mr. Hewitt, that 'the successful issue of a case of trephining for matter between the bone and the dura mater is almost unknown to surgeons of our own time.'—Pp. 9-10.

"The Museum possesses eight examples of that rare and interesting variety of gunshot fracture of the cranium, in which the external table is unbroken, while the vitreous table is fissured and sometimes depressed. One of the most perfect of these specimens (No. 1,568, A. M. M.) is figured in No. 94, Photographic Series, S. G. O. An abstract of the case is subjoined:—

"Private David P——, Co. C, 35th Wisconsin Vols., was wounded at

Tupelo, Mississippi, July 18th, 1864, by a musket ball, which struck the skull obliquely, and apparently inflicted a scalp wound merely, between the sagittal suture, and the left parietal protuberance. There were no signs of cerebral disturbance. The wound was dressed simply, and the patient was conveyed to Memphis, Tennessee, and admitted into the Adams U.S. General Hospital on July 23rd. He was then perfectly rational, and free from head symptoms. Two days subsequently, indications of compression of the brain were observed, and on the afternoon of the 25th they had rapidly become aggravated. The pulse was slow, the respiration laboured, the pupils dilated, the sphincters relaxed. A very careful exploration of the wound was made, but, of course, no cranial fracture could be detected. The treatment was limited to cold applications to the head, scarified cups to the nucha, and brisk purging. On the 26th, the patient gradually became comatose. The discharges from the bowels and bladder were involuntary. The patient continued to sink on the 27th, and died at 1 a.m. on the 28th of July. At the autopsy the internal table of the left parietal was found to be fractured and depressed at a point corresponding with the wound in the scalp. The dura mater was wounded, and there was a large abscess in the left cerebral hemisphere.

"In a specimen which is believed to be unique, without any apparent lesion of the external table, a fragment of the vitreous plate of the frontal bone was found to be completely detached and depressed upon the dura mater."—Pp. 10-11.

"Specimens 3,639, 3,406, 622, 1,922, and 646, A. M. M., afford other examples of this rare form of injury, to which S. Cooper, Guthrie, Hennen, Hewitt, Williamson, and Legouest allude, illustrating their observations by a case examined by Mr. Dean, of Cambridgeshire, a specimen in the Dupuytren Museum, which is figured in M. Legouest's work, and specimen No. 2,893 of the Netley Collection.

"It is believed that this accident results, in most instances, from a small projectile striking the cranium very obliquely, or possibly, in some cases, from a comparatively slight blow from a body with a large plane surface."—Pp. 11-12.

"Several cases of undepressed fracture are reported in which a ball gouged out a small portion of the external table. A number of instances are recorded in which considerable portions of the calvaria have been removed by explosions of shell, without depression. Very rarely a musket-ball produces the same effect as in the following remarkable case. The patient is represented in Photograph No. 58, A. M. M.:—

"Private Edson D. Bemis, Co. K., 12th Massachusetts Vols., was wounded at Antietam by a musket-ball, which fractured the shaft of his left humerus. The fracture united kindly, with very slight angular displacement, and quarter of an inch shortening. Promoted to be cor-

poral, Bemis received, May 6th, 1864, at the battle of the Wilderness, a wound from a musket-ball in the right iliac fossa. He was treated in the Chelsea Hospital, near Philadelphia. There was extensive sloughing about the wound, but it ultimately healed entirely, leaving a large cicatrix, parallel with Poupart's ligament. Eight months after the injury, Bemis returned to duty with his regiment. On February 5th, 1865, Corporal Bemis was severely wounded at the engagement at Hatcher's Run, near Petersburgh, Virginia. Surgeon A. Vanderveer, 66th New York Vols., reports that the ball entered a little outside of the left frontal protuberance, and passing backwards and upwards, removed a piece of the squamous portion of the temporal bone, with brain substance and membranes. When the patient entered the hospital of the 1st Division of the 2nd Corps, brain matter was oozing from the wound. Respiration was slow; the pulse 40; the right side paralysed; insensibility total. On February 8th, the ball was removed from the substance of the left hemisphere. In a few days paralysis disappeared. The patient was transferred to Fort Richmond, New York Harbour. He recovered perfectly, and on July 15th visited Washington, and was photographed at the Army Medical Museum. The wound in the head was then nearly healed. There was a slight discharge of healthy pus from one point. The pulsation of the brain could be felt through the integument. The mental and sensory faculties were unimpaired. The corporal had been discharged from service, and recommended for a pension."—P. 13.

"Instances were not uncommon of the splitting of round musket-balls in striking the skull at an acute angle."—P. 14.

"Conoidal balls were less liable to split after this fashion, yet such instances were occasionally observed."—P. 14.

"The occurrence of hernia or fungus cerebri is mentioned in connexion with eighteen cases of gunshot fracture of the skull, complicated by lacerations of the dura mater and brain. In four of these cases recovery took place without operative interference with the protruding fungus mass, which, in these instances, gradually contracted, was then covered by granulations, and finally cicatrized. In those cases in which bandaging or compression were resorted to, cerebral oppression was soon manifested, and stupor and coma eventually supervened. In those in which the tumour was sliced off, as usually recommended, at the proper level of the brain, it was commonly speedily reproduced, and death from irritation ensued."—P. 17.

"In looking over the registers of gunshot injuries of the head two general facts are noticed: First, that in the after treatment of scalp wounds, a multitude of surgeons did not consider spare diet, perfect rest, and antiphlogistic measures as of essential importance; and, secondly, that in the treatment of cranial fractures, the general tendency was to the practice recommended by Guthrie in regard to operative procedures,

rather than the more expectant plan insisted upon by the majority of modern European writers on military surgery. The interest of the material and the importance of the subject alike invite extended comment; but in this brief and cursory review, the motto of Montaigne, *je raconte je ne juge pas*, must be rigorously adhered to."—P. 17.

"Of 187 recorded cases of gunshot fracture of the vertebræ, all but 7 proved fatal. Six of these were fractures of the transverse or spinous apophyses. The seventh case is that of a soldier wounded at Chickamauga, September 20th, 1863, by a musket-ball, which fractured the spinous process of the fourth lumbar vertebra, and penetrated to the vertebral canal. The ball and fragments of bone were extracted at a Nashville Hospital. The patient was transferred to Louisville, thence to Jefferson Barracks, Missouri, thence to Madison, Indiana, and finally, on July 26th, 1864, to Quincy, Illinois. The last report states that he was likely to recover. . . . . .

"Five thousand one hundred and ninety-five gunshot flesh wounds of the back have been recorded, of which a large proportion are injuries from shell. Troops being often ordered to lie down under a shell fire, this region becomes particularly exposed."—P. 21.

"In the treatment of penetrating wounds of the chest, venesection appears to have been abandoned altogether. Hæmorrhage was treated by the application of cold, perfect rest, and the administration of opium. These measures seem to have proved adequate generally, and no instances are reported of the performance of paracentesis or of the enlargement of wounds for the evacuation of effused blood. Hæmorrhage from the vessels of the costal parietes has been exceedingly rare, and, in the few instances recorded, was a secondary accident. Hence the management of bleeding from wounded intercostal arteries has presented theoretical rather than practical difficulties."—P. 21.

"The records of the results of the so-called method of 'hermetically sealing' gunshot penetrating wounds of the chest are sufficiently ample to warrant an unqualified condemnation of the practice. The histories of the cases in which this plan was adopted have been traced, in most instances, to their rapidly fatal conclusion."—P. 22.

"Few examples of recovery are recorded where the track of the ball passed near the root of the lung. The cases in which there was a fracture of the rib at the wound of entry were very dangerous. The established opinion, that penetrating wounds with lodgment of the ball are more fatal than perforating wounds, was amply illustrated. But few recoveries with balls lodged in the lung are recorded, and the histories of such cases are less explicit and complete than could be desired."—P. 22.

"Only four cases are recorded of gunshot wounds of the heart that came under treatment. The specimens from these four cases are pre-

served in the Army Medical Museum. The patient that lived longest after a gunshot wound of the heart survived twelve hours (Spec. 837, A.M.M.). In this case a small pistol-shot entered the left ventricle and passed out through the right auricle."—P. 23.

"*Gunshot Wounds of the Abdomen.*—Of 2,707 gunshot wounds of the abdomen reported from the beginning of the war, to July 1st, 1864, there were 2,164 flesh wounds, and 543 cases in which the peritoneal cavity was penetrated or the abdominal viscera injured. Among the flesh wounds, 114 fatal cases are recorded, which were, in most instances, cases of sloughing from injuries of the abdominal parietes by shells. Of the 543 penetrating wounds, the results have been ascertained in 414, and were fatal in 308, or 74 per cent. The number of recoveries is unexpectedly large, but includes only cases in which the reports showed, beyond question, that the abdominal cavity had been involved. . . .

"In many instances fæcal fistulæ were produced. They commonly closed after a time, without operative interference, reopening at intervals, and then healing permanently. . . . .

"Lieutenant G. P. Deichler, Co. I., 69th Pennsylvania Vols., aged twenty-two years, was wounded by a conoidal musket-ball, at Hatcher's Run, Virginia, in March, 1865. The ball entered the right iliac region, and, passing through the ascending colon, made its exit a little to the left of the last dorsal vertebra. The patient was taken to a field hospital, and from thence to Armory-square Hospital, at Washington, where he was admitted on April 1st, in an exhausted condition, with grave symptoms of peritonitis. There was a copious fæcal discharge from both wounds. Appropriate dressings were applied, a fourth of a grain of morphia was ordered to be given every second hour, and stimulants were directed. On April 7th, sloughs separated from both wounds, and left a clean granulating surface. A large piece of sphacelated omentum was removed from the anterior wound. The opiate treatment was continued till April 27th, when there was a fæcal evacuation by the anus, for the first time since the injury. On June 12th, the discharge from the wounds was very slight. The edges of the wounds were now refreshed and approximated by adhesive strips. On August 10th, the anterior wound was firmly healed. There was a small fistulous sinus at the posterior wound, discharging pus scantily. On this day, a photograph was taken at the Army Medical Museum, from which the plate opposite is copied, and the patient left the hospital for his home in excellent general health. . . . .

"Recoveries after wounds of the large intestines have been much more numerous than after wounds of the ileum or jejunum.

"No case has been reported in which it was thought expedient to apply a suture to the intestines after gunshot wounds.

"Gunshot wounds of the liver were usually followed by extravasation

into the abdominal cavity, and rapidly fatal peritonitis. Of 32 cases in which the diagnosis was unquestionable, all but 4 terminated fatally."—Pp. 25-26.

"All the cases of gunshot wounds of the spleen that have been reported were fatal. No symptoms are mentioned that particularly distinguished these from other gunshot injuries involving the abdominal cavity, and it is quite possible that the list of recoveries may include cases in which this viscus was injured, though the diagnosis was not made out.

"A case is recorded of a lacerated wound of the abdominal walls, with lesion and protrusion of the pancreas, a portion of which is reported to have been excised. It appears probable that it was rather a portion of the omentum that was removed. Several cases are reported in which it was believed that recovery took place after gunshot wounds of the kidney. But it can hardly be considered that the evidence of gunshot wound of the kidney was, in these places, unequivocal.

"Gunshot wounds of the bladder, when the projectile entered above the pubes or through the pelvic bones, have proved fatal, so far as the records have been examined. There are many examples of recovery, however, from injuries of the parts of the bladder uncovered by the peritoneum.

"Several examples of recovery, after protrusions of the abdominal viscera through gunshot wounds, have been reported. In two cases in which loops of small intestine issued, they were immediately returned and retained by means of adhesive strips and bandages, and the patients recovered with ventral hernia. The escape of omentum, through wounds, would not appear to be a very serious complication, for in many cases portions of protruding omentum have been excised, and the patients have, nevertheless, recovered promptly.

"Penetrating wounds of the abdomen, complicated with fractures of the vertebræ, uniformly proved fatal."—P. 27.

"*Gunshot Fractures of the Pelvis.*—The records under this head include only the cases in which the abdominal cavity was not penetrated. From the beginning of the war to October 1st, 1864, 359 such cases have been reported. Recovery took place in 97, death in 77, and the result is still to be ascertained in 185. In 256 cases the ilium alone was injured, the ischium alone in 19, the pubes in 12, the sacrum in 32, and in 40 cases the lesions extended to two or more portions of the innominata.

"The gravity of these cases depended upon the location and extent of the fracture. The majority of recoveries were from fracture of the ilium by musket-balls, in which the crest was grooved, or comparatively slight injury was inflicted. Yet there were many examples of perforation of the ilium with ultimate recovery. . . . .

"In most cases of injury to the pelvic bones, very tedious suppuration ensued, and surgery could do but little, except to facilitate the escape of pus, and to remove dead bone as it became separated. The returns

corroborate the observation of Stromeyer, that there is a great liability to pyæmia in gunshot fractures of the pelvis."—P. 28.

"*Gunshot Wounds of the Genito-Urinary Organs.*—In this category are included gunshot wounds of the genitals or urinary organs that are not complicated with fractures of the pelvis, or with penetration of the abdominal cavity. To October 1st, 1864, the reports furnish 457 such wounds, of which 37 had a fatal result.

"Surgeon S. W. Gross, U.S. Vols., reports the singular history of a soldier of the 16th U.S. Infantry, struck at Shiloh, on the right side of the penis by a conoidal musket-ball, which buried itself in the corpus cavernosum, and became encysted. It gave no pain, and the patient refused to have it extracted.

"The following is an interesting case of gunshot wound of the bladder:—

"Private Conrad L——, Co. A., 23rd Indiana Vols., aged thirty-two years, was wounded at Vicksburg, Miss., June 23rd, 1863, by a fragment of a hand-grenade, which entered the right nates two inches outside the end of the coccyx, and passed into the bladder where it lodged. Urine passed by the wound immediately after its reception. The patient was admitted into the General Hospital at Jefferson Barracks, Missouri, August 5th, 1863. His general health was much impaired. The urine passed mainly by the wound, and was largely mixed with pus and blood. The treatment directed comprised warm fomentations, mild diuretics, stimulants, and nutritious diet. On February 20th, 1864, a catheter was with much difficulty passed by the urethra, and the presence of a foreign body was ascertained. On March 19th, the general condition was improved, the wound was so far closed as to admit only a large-sized probe. Attempts to pass a catheter or to probe the wound caused chills and febrile irritation. On April 2nd, 1864, the lateral operation of lithotomy was performed by Surgeon John F. Randolph, U.S.A., the patient being anæsthetised by equal parts by bulk of chloroform and ether. A rectangular fragment of shell, largely incrusted with earthy phosphates, was extracted. It was two inches in length, seven-eighths of an inch in width, and three-eighths of an inch in thickness. It weighed two ounces and five grains troy. On April 12th, the urine passed by the wound. On April 27th the wound had healed, and the patient was soon afterwards restored to his ordinary condition of health. The incrusted fragment of shell is preserved in the collection of the Army Medical Museum (Spec. 88). It weighs 898 grains, portions of the phosphatic deposit having crumbled away."—P. 29.

As regards gunshot wounds of the upper and lower extremities, it has been deemed premature to make deductions from statistics which are daily augmenting and tending towards completion.

Many cases are as yet incomplete, either from imperfect records, or because their termination for good or evil has not yet arrived.

The following table is valuable, so far as it professes to go:—

"*Table exhibiting the Results of* 2,003 *Terminated Cases of Gunshot Fracture of the Femur, or of Gunshot Wounds of the Knee-Joint, out of* 3,106 *Cases that have been entered on the Records.*

	Total terminated	Amputation				Excision				Conservative Measures				Aggregate
		Recovered	Died	Undetermined	Mortality rate of determined cases	Recovered	Died	Undetermined	Mortality rate of determined cases	Recovered	Died	Undetermined	Mortality rate of determined cases	
Gunshot Fractures of Femur, implicating Hip-Joint..	82	0	2	0	100·	2	10	1	83·33	0	68	14	100·	97
Gunshot Fractures of upper third of Femur	387	8	24	11	75·	7	18	6	72·	93	237	199	71·81	603
Gunshot Fractures of middle third of Femur.....	346	42	51	47	54·83	2	13	10	86·66	106	132	148	55·46	551
Gunshot Fractures of lower third of Femur.....	418	131	112	117	46·09	1	1	0	50·	72	101	137	58·38	672
Gunshot Wounds of the Knee-Joint, with or without Fracture,.....	770	121	331	266	73·23	1	9	1	90·	50	258	146	83·76	1,183
	2,003	302	520	441	63·26	13	51	18	79·68	321	796	644	71·26	3,106

"In examining the above table in detail, it is seen that the results are ascertained in 822 of the 1,263 cases treated by amputation, or 65 per cent.; in 64 of the 82 cases treated by excision, or 78 per cent.; and in 1,117 of the 1,761 cases treated by conservative measures, or 63 per cent.

"The only recorded recoveries after gunshot fracture of the femur involving the hip-joint, are those in which excision was practised. In fractures of the upper third, the mortality rate is greatest for the cases treated by amputation. There were 43 of these cases, and in 19 of them the amputation was done at the hip-joint. Excision gives 7 recoveries after fractures of the upper third; two of these were excisions of the head and a portion of the shaft of the femur, 4 were formal excisions of the continuity, and 1 was a removal of fragments and rounding off of sharp edges of bone, which was admitted among the excisions with some hesitation. Under conservative measures 93 cases of fracture of the upper third had survived the injury a year or more, and are reported as recovered. The mortality rate of the completed cases of amputation for gunshot wounds of the knee-joint is large, and will probably be modified when the results of the numerous unfinished

cases are recorded. It depends partly, however, upon the excessive mortality of intermediate amputations of knee-joint injuries. With six or eight exceptions, the 50 recoveries without amputation classified with gunshot wounds of the knee-joint were examples of fractures of the patella, in which the evidence that the joint was opened was not unequivocal.

"Comparing in gross the 822 finished cases treated by amputation, with the 1,117 treated by conservation, the mortality rate of the former has the advantage by 8 per cent.; an advantage that is maintained in the different regions, except in the upper third. It must be remembered that the amputations include most of the bad cases, and those in which preservation of the limb was attempted and abandoned. . . . .

"In Stromeyer's classification of the action of bullets on bone, the fifth division is that in which the ball pierces the bone and forms a canal without causing further splintering. Examples are common in the upper portion of the tibia, but very rare in the upper extremity of the femur. The following is such an instance:—

"Captain James M. L——, Co. I., 20th Indiana Vols., was admitted into Columbia College Hospital, at Washington, June 29th, 1862, with two gunshot wounds, received a day or two previously in one of the battles before Richmond. The first wound was through the left lumbar muscles. After receiving it the officer fell, and while lying on the field he was again struck by an elongated musket-ball, which entered on the outer side of the left thigh, a little below the great trochanters, and passing upwards and inwards, lodged. A finger could be readily passed into the perforation in the femur, but the ball could not be reached. Three formal attempts to ascertain its position and accomplish its removal were made unsuccessfully. The patient died from exhaustion on August 19th, 1862. The near proximity of the ball had not induced any disease of the hip-joint. The specimen and the facts relating to it were contributed by Assistant-Surgeon W. M. Notson, U.S.A. . . .

"Just above the condyles, where the cancellated structure of bone predominates, musket-balls often make a clean perforation. But the wedge-like action of the elongated musket-ball almost invariably involves longitudinal splintering. . . . .

"The later writers on military surgery have duly insisted upon the different effect upon bones of the impact of round musket-balls and of the cylindro-conical projectiles. The degree of difference in the injuries inflicted has, perhaps, been exaggerated. It is unquestionably true, however, that the round ball usually produces much less longitudinal splintering than the conoidal ball, with its greater weight and immense force of propulsion and wedge-like action. . . . .

"One curious effect, occasionally produced by the heavy conoidal ball in striking the femur has not been very generally noticed. The bone is fissured and comminuted, though less than is common at the point at

which the ball impinges, while at two or three inches above or below this point, according as the point of impact is below or above the middle of the shaft, a nearly transverse fracture of the shaft is produced. The accompanying figure is an example; but the Museum contains a dozen better illustrations. The best are of cases in which a ball has struck the condyles anteriorly, and the shaft is snapped across two inches above. In several of these specimens, the transverse fracture is not connected by fissures with the comminuted fracture produced by the ball. It appears that these injuries were produced by balls fired at short range.

"When the femur is simply contused by a ball, a limited necrosis commonly ensues from the destruction of the periosteum, and inflammation of the medullary cavity often results, and death from pyæmic infection. The records would indicate that gunshot contusions of the long bones, a subject ably discussed of late by Surgeon J. A. Liddell, U.S. Vols., are more dangerous accidents than comminuted gunshot fractures even. Of gunshot contusions of the femur there are seventeen specimens at the Army Medical Museum. Several of these bones were sawn through the long axis, immediately after the death of the patient, and coloured drawings were prepared, exhibiting the appearances of the inflamed or suppurating or gangrenous medulla.

"Cases in which a portion of the shaft of the femur is gouged out, or a part of its cylinder crushed without entire division of the continuity, are also very fatal."—Pp. 31-2-3-4.

"Of gunshot injuries of the knee-joint, the Museum possesses 355 specimens." . . . .

"Dr. Bellanger has recorded five fatal cases of gunshot injuries of the knee-joint treated by free incisions into the articulation, and Surgeon Liddell, U.S. Vols., has published three such cases. The records contain a score of similar examples. Yet amputations for gunshot injuries of the knee that have reached the secondary period are scarcely less disastrous."—P. 36.

"*Gunshot Wounds of the Arteries.*—The number of cases reported under this head is extremely small. . . . . Those only are included in which the canal of a large vessel is primarily opened, and in which this is the principal accident. Such cases are to be sought for among the dead on the battle-field rather than in the field hospitals. . . . . In the few cases of primary gunshot lesions of the arteries that came under treatment, it was usually found that only a portion of the calibre of the vessel had been carried away, and that retraction had been thus prevented. But 44 cases are entered on the records. In most of them ligatures were placed above and below the seat of injury; but, in a few instances, the main trunk was tied at a distance, and amputation was practised when the bleeding recurred. Twenty of the 44 cases terminated fatally."—Pp. 38-9.

No special reports on wounds of veins seem to have been received.

Wounds of nerves are dealt with in a special report, which we shall notice farther on.

The number of sabre and bayonet wounds which came under treatment did not amount to 250, and present no special interest.

"*Tetanus.*—The 363 cases of traumatic tetanus recorded in the register for that subject are all that have been reported during the war. The proportion to the total number of wounds is not large. In the Schleswick Holstein war, Stromeyer had 6 cases among 2,000 wounded. In Napoleon's campaign in Egypt, in the Peninsular campaign, and in the revolt in India, the ratio appears to have been larger than this. Among 12,094 wounded, the British in the Crimea had 19 cases only.

"The histories of the 363 reported cases of tetanus are generally satisfactory in their details of symptoms, progress, and treatment: 336 cases terminated fatally. Of the 27 recoveries reported, the disease was of a chronic form in 23. In the 4 remaining cases the symptoms were very grave. In 2, recovery took place under the use of opiates and stimulants; in 2, after amputation of the wounded part.

"The great majority of the cases were treated by the free use of opium, combined with stimulants and concentrated nourishment. Chloroform inhalations were very generally employed during the paroxysms of spasmodic contraction. Subcutaneous injections of the salts of morphia and atropia were frequently used. Cathartics, quinia, camphor, cannabis indica, bromide of potassium, strychnia, belladonna, and aconite are mentioned among the remedies employed. Cups, blisters, turpentine stupes, and ice, were among the applications made to the spine; and fomentations with opium or tobacco were, in some cases, applied to the wound. Amputation, the division of nerves, and the extirpation of neuromata in stumps were the surgical measures sometimes employed. The results have not modified the conclusion of Romberg, that 'wherever tetanus puts on the acute form, no curative proceeding will avail, while in the milder and more tardy form the most various remedies have been followed by cure.' The value of nicotine, of the Calabar bean, and of curare as curative agents in tetanus was not tested.

"Autopsies were made in many cases, but with almost negative results."—Pp. 41-42.

"*Secondary Hæmorrhage.*—In reviewing the 650 recorded cases of secondary hemorrhage from gunshot wounds, it appears that, during the earlier part of the war, there were many surgeons who were not sufficiently impressed by the precepts of Bell and Guthrie, and who frequently treated secondary hæmorrhage from gunshot wounds by tying the main trunk at a distance from the wound, even when the bleeding occurred at a comparatively early period. Later in the war, however, it was the universal practice to endeavour to secure both ends of the

bleeding vessel at the seat of injury, and some brilliant examples are recorded in which this was accomplished in wounds of the posterior tibial or popliteal, when limbs had become infiltrated and swollen, and the difficulties of the operations were immense."—P. 43.

"*Pyæmia.*—On this subject 281 reports have been examined, and the individual cases detailed in them have been transcribed upon the registers: 251 special reports on the subject remain to be examined. The histories of 754 cases are recorded in the register, the *post mortem* observations accompanying a large proportion of the fatal cases. These number 719, or 95·35 per cent. Pyæmia supervened in 377 cases of gunshot injury in which no operation had been performed, and after 295 cases of amputation, of which 155 were cases of amputation in the continuity of the femur. The purulent infection was subsequent to excision of the shafts of long bones in 27 cases, and to excisions of joints in 28 cases."

"These figures by no means represent the frequency with which pyæmic poisoning has occurred. It has been one of the great sources of mortality after amputations, and its victims are to be counted by thousands. The small number of cases on the register are taken from special reports. Several valuable papers have been contributed on the pathology of this affection, and a number of statistical reports on its treatment. The conclusions of the latter are adverse to the therapeutical utility of the sulphites and hyposulphites in this disease."—P. 43-4.

"*Amputations.*—The histories of 13,397 amputations for gunshot injury have been examined and recorded, and the final results have been ascertained in 9,705 cases. The following table exhibits the number belonging to each region, and includes both primary and secondary cases. It shows the regular increase in the rate of mortality as the the trunk is approached.

Amputations of the Superior Extremities.	Recovered	Died	Total	Per cent. of Mortality
Fingers and Parts of the Hand ...	1,778	29	1,807	1·60
Wrist	34	2	36	5·55
Elbow	19	0	19	
Forearm	500	99	599	16·52
Arm	1,535	414	1,949	21·24
Shoulder-Joint	144	93	237	39·24
Total of Upper Extremity ...	4,010	637	4,647	13·70
Amputations of the Inferior Extremities.				
Toes	784	6	790	·75
Partial Amputations of the Foot ...	108	11	119	9·24
Ankle-Joint	58	9	67	13·43
Leg	1,737	611	2,348	26·02
Knee-Joint	52	64	116	55.17
Thigh	568	1,029	1,597	64·43
Hip-Joint	3	18	21	85·71
Total of Lower Extremity ...	3,310	1,748	5,058	34·55
Aggregate	7,320	2,385	9,705	24·57

"*Amputations at the Wrist.*—The disarticulation at the wrist has been performed in preference to the amputation of the forearm, when the hand was totally disorganized. When practised by the circular method it is a good operation. The results of the cases examined are satisfactory, themortality being ten per cent. less than in amputation of the forearm."—P. 45.

"*Amputations at the Elbow.*—The returns corroborate the conclusions of Dupuytren, Malgaigne, and Legouest, who combat the disfavour into which this operation has fallen. It was done infrequently in the late war, but 19 cases having been reported. But in all of these the ultimate results have been ascertained, and were favourable in every instance. The success of Salleron and other French surgeons with this operation in the Crimea is well known. Whenever, then, it is impracticable to amputate the forearm, disarticulation at the elbow should be preferred to amputation of the arm. The oval method answers the purpose best in this locality."—P. 46.

"*Amputations at the Ankle-Joint.*—The record is far from complete. In the terminated cases, Syme's method was employed in 25 cases, Roux's method in 2 cases, and Pirogoff's in 9 cases. Several casts and photographs of well-rounded stumps, obtained by the latter procedure, are deposited in the Army Medical Museum. But the operation appears to be regarded with little favour. Baron von Horronitz, Surgeon-in-Chief of the Russian Marine, in his recent visit to this office, mentioned that Pirogoff had himself abandoned it, finding the segment of the os calcis likely to become necrosed."—P. 46.

"Of 49 cases of primary amputation at the knee-joint, 31 recovered and 16 died; while 2 underwent re-amputation, of whom 1 recovered, and 1, a tuberculous subject, died. This gives a percentage of mortality in primary amputations at the knee-joint of 34·9. The mortality in primary amputation at the lower third of the thigh is much larger than this; indeed it has been already indisputably proved by the Crimean statistics, and by M. Malgaigne, that the mortality in amputation augments in exact proportion as the incisions approach the trunk. . .

"The objection to amputations at the knee-joint, that the resulting stump is ill adapted to the use of an artificial limb, is set at rest by the results obtained by Hudson and other manufacturers, who distinctly declare that the stumps from the operation at the knee-joint give a base of support far better than any possibly to be gained in thigh-stumps."—Pp. 47-8.

"*Amputations of the Thigh.*—In 1,597 terminated cases, 568 recovered and 1,029 died, or 64·43 per cent., which is within a fraction of the mortality after amputations of the thigh in the English army in the Crimea, during the latter part of the campaign. In the French army in the Crimea, the whole number of amputations of the thigh for gunshot injuries was 1,666, of which 1,513, or 91·89 per cent. terminated fatally.

"Of these 1,597 amputations, the date of operation is ascertained

with precision in 1,061. Of these, 423 were primary and 638 were intermediate or secondary. The ratio of mortality was 54·13 in the former, and 74·76 in the latter."—P. 48.

Amputation at the hip-joint constitutes the subject of Circular No. 7, and shall also receive a special notice.

"*Excisions of the Wrist.*—The 35 cases included in this category were all examples of partial excision. In 27, the ends of the radius or ulna, or of both, were removed, and, in some instances, shattered fragments of the upper row of carpal bones. In 8, the greater part of the carpus was excised. Death took place once from pyæma, and twice from exhaustion from protracted suppuration and irritative fever; 26 cases are reported as recovered. In two cases, amputation of the forearm became necessary. The reports are unsatisfactory in relation to the amount of mobility left in the hand, and the cases are now under investigation with reference to this point."—P. 54.

"*Excisions of the Elbow.*—The returns for three-fourths of the entire period give 315 cases of excision of the elbow, and the results are ascertained in 286 cases. In 16 cases amputation of the arm became necessary; 62 cases terminated fatally, or 21·67 per cent., which is a mortality a fraction greater than that resulting from amputations of the arm. This result is altogether opposed to the Schleswick Holstein and Crimean experience, and will doubtless be modified when the statistics are completed. It may be ascribed partly to the fact that the returns for the earlier part of the war include quite a large proportion of partial excisions, which are far more hazardous than complete removal of the articular surfaces."—P. 55.

"*Excisions of the Shoulder-Joint.*—Nearly all the cases that have been reported during the war have been recorded. The results are given in the following table:—

Table exhibiting the Results of Cases of Excisions of the Shoulder-Joint for Gunshot Injuries.

	Primary Operations	Secondary Operations
Died	50	115
Recovered	160	183
Results undetermined	42	25
	252	323
Aggregate	575	

"The percentage of mortality is 23·8 in primary cases, 38·59 in secondary cases, or a mean ratio of 32·48. The ratio in amputations at the shoulder-joint is 39·24, a percentage of 6·76 in favour of excision. Of 36 cases of gunshot fracture of the head of the humerus, selected as favourable cases for the expectant plan and treated without excision or amputation, 16 died, or 44·4 per cent., a ratio in favour of excision of 11·96 per cent. But it is superfluous to offer further proofs in behalf of this admirable operation."—P. 55.

"Where the shaft of the humerus has been extensively shattered, our surgeons have not been deterred by the prohibition of Guthrie, but have frequently removed the head within even five and six inches of the diaphysis, with excellent results."—P. 56.

"In the remarkable case of Private Cleghorn, 1st New Jersey Cavalry, after an excision of the head and upper third of humerus, the remainder of the bone became necrosed, and was excised, together with the articular ends of the radius and ulna, and yet a limb was preserved which, with the aid of ingenious apparatus, is very useful. (Photograph 112, A.M.M.)—P. 57.

"It appears, then, that the judicious use of the gouge and bone forceps is admissible in gunshot wounds of the ankle-joint; but that the formal excisions are rarely successful."—P. 57.

"*Excisions of the Knee-Joint.*—Prior to the present war, there were but seven recorded examples of excision of the knee for gunshot injury. These were, the elder Textor's case (in 1847); the Schleswick Holstein case (1851), in which Fahle operated by Stromeyer's direction; Mr. Lakin's case (1855), in the Crimea; the Alumbaugh case (1857), in the Indian Mutiny; the case of a man in the London Hospitals wounded by bird shot (1861); a similar case at Birmingham (1861); and lastly, Verneuil's case.

"Verneuil's case and the Birmingham case were successful. The patients were lads of seventeen and nineteen. . . . .

"During the late war, complete excision of the knee-joint has been performed eleven times, with two successes."—P. 57.

"*Excisions of the Head of the Femur.*—There were then on record, previous to the late war, twelve cases of this operation, with one success. This was the case reported by Surgeon O'Leary of the 68th British Infantry, who excised the head and several inches of the shaft of the femur for Private Thomas Mackenena, the great trochanter being shattered by a fragment of shell.

"Experience having demonstrated the uniform fatality of gunshot fractures of the head or neck of the femur when abandoned to the resources of nature, and the excessive mortality of amputations at the hip-joint for gunshot injury, the highest authorities in military surgery were then unanimous in advising, under suitable conditions, excision of

the head of the femur, until, as Baron Hippolyte Larrey expressed it, the experiments of the future proved more discouraging than the experience of the past."—P. 61.

Of thirty-two cases in the late war twenty-eight died, and only four recovered.

"*Ligations.*—The following table exhibits the number of cases of ligation of the larger arteries, from the beginning of the war to March, 1864:—

	Number of cases recovered	Number of cases died	Total	Ratio of Mortality
Common Carotid	12	37	49	75·51
External Carotid	...	2	2	100·
Subclavian, otherwise Scalenus	7	28	35	80·
Axillary	3	21	24	87·50
Brachial	53	11	64	17·18
Radial	12	2	14	14·28
Ulnar	9	2	11	18·18
Common Iliac	...	3	3	100·
Internal Iliac	...	2	2	100·
External Iliac	2	14	16	87·50
Femoral	25	83	108	76·85
Profunda	1	6	7	85·71
Popliteal	4	12	16	75·
Anterior Tibial	11	5	16	31·25
Posterior Tibial	13	6	19	31·57
Peroneal	...	2	2	100·
All others	11	4	15	26·66
Aggregate ...	163	240	403	...

"Of the three cases of ligation of the common iliac, one was performed by Surgeon M'Kee, U.S.A., on account of secondary hæmorrhage from a branch of the left internal iliac. The hæmorrhage resulted from a gunshot wound of the pelvis, and occurred on the 15th and again on the twenty-third day. On the second bleeding, the internal iliac was tied; but the hæmorrhage was not controlled, and the main trunk was secured. The patient survived two days, and the bleeding did not recur. . . .

"The new hæmostatic process recommended by Professor Simpson was adopted in a few cases, with favourable results."—Pp. 78-9.

"The register of operations for surgical diseases contains the histories of 443 cases, many of which were of great interest. For example, 15 cases of tracheotomy or laryngotomy are recorded, with six recoveries. The operation was done once, with success, in a case of croupal diphtheritis."—P. 79.

"*Anæsthetics.*—There have been consulted, in regard to the employment

of anæsthetics, the reports of 23,260 surgical operations performed on the field or in general hospitals. Chloroform was used in 60 per cent. of these operations, ether in 30 per cent., and in 10 per cent. of the cases a mixture of the two was administered. At the general hospitals, the greater safety of ether as an anæsthetic was commonly conceded. It was often employed, and no fatal accident from its use has been reported. In the field operations, chloroform was almost exclusively used. The returns indicate that it was administered in not less than eighty thousand cases. In seven instances, fatal results have been ascribed with apparent fairness to its use."—P. 87.

The medical portion of No. 6 contains numerous tables, showing the comparative frequency of the several diseases. Space forbids us to copy these, and extracts from them would be useless.

We must content ourselves with a few extracts on the more important diseases.

"*Camp Fever*—(*Typho-malarial Fever*).—On account of the great mortality resulting from it, camp fever has been, during the two years under consideration, the most important of the diseases of the army.

"Under the general designation of Camp Fever, all those cases are here included which were reported, during the first year of the war, under the heads of Typhus, Typhoid, Common Continued, and Remittent Fevers, and, during the second year, under the heads of Typhus, Typhoid, Typho-Malarial, and Remittent. . . . .

"Using then the term Camp Fever in the broad sense above indicated, the following statistical facts may be presented:

"The whole number of cases during the first year of the war was 74,619, the deaths 6,315; during the second year, 138,641 cases and 13,144 deaths,—the total for the two years being 213,260 cases and 19,459 deaths. . . . .

"The ratio of cases and deaths to strength is very similar for both years. In a general way, it may be said that each year about one-quarter of the men suffered from some form of the fever, and that the deaths amounted to about two per cent. of the strength. The whole number of deaths from fevers during the first year was nearly one-half the total mortality from disease: during the second year, owing to the increased mortality from other diseases, and especially from diarrhœa and dysentery, only about one-third the total mortality from disease, though still maintaining nearly the same ratio to strength.—Pp. 109-10.

"*Diarrhœa and Dysentery.*—Much interesting material has been collected bearing on the causes, symptoms, nature, and treatment of these formidable affections. . . . .

"The origin of the diarrhœa and dysentery of troops is to be sought

in no one condition, but in the co-operation of several, each of which should be the subject of hygienic precautions, if the health of an army is to be preserved. Some of the chief of these, but assuredly not the only ones, are the scorbutic taint dependent upon camp diet, the malarial influences operating in certain seasons and regions, the overcrowding and filth of camps and barracks, the heat of summer, the exhaustion and fatigue of campaigns, and the use of water containing saline or organic impurities. Whether there has ever existed, in addition to these intelligible conditions, any specific causative momentum deserving the designation of epidemic influence, is a grave question which receives no affirmative reply from any experience reported during this war. The causation of *chronic* diarrhœa and dysentery is to be found in the long-continued action of the influences above mentioned, and in the consequent frequency and duration of attacks, but not in any specific cause or set of causes different from those which induce the acute form."—P. 121.

"It is impossible to escape the conviction that a change of climate is one of the most important elements in the treatment of these diseases . . . and throughout the war, patients suffering from the fevers and bowel affections of southern latitudes were, as far as the exigencies of the service would permit, transferred to the North."—P. 122.

"Chronic flux, unaccompanied by camp fever, may run its course to its own natural termination in extreme emaciation, with death from debility and exhaustion; or, as perhaps happens more frequently, terminate at an earlier period, in consequence of the occurrence of some disastrous complication. Often, for example, after the disease has lasted a long time without fever, the stools varying from two or three to twenty or more daily, the patient still walking about and suffering little pain, acute dysenteric symptoms set in with fever, delirium, abdominal tenderness, tormina, tenesmus, rapid sinking, and death in a few days. An autopsy shows the colon, which is more or less ulcerated according to the previous duration and severity of the flux, to be coated with a yellowish or greenish-yellow, sometimes brownish-yellow, pseudo-membrane, which often extends also through the small intestines. The nature of this pseudo-membrane has been made the subject of careful investigation in the Museum, and the examination of a large number of cases leaves no doubt on the matter. It is simply the croupous lymph, pseudo-plastic lymph, caco-plastic lymph, or false membrane of medical writers. The examination by the microscope of properly prepared sections shows it to be composed of innumerable round cells (lymph cells, pus cells), held together by an adhesive granular matrix more or less resembling coagulated fibrin. With such sections, there is no difficulty in tracing the origin of this membrane to a rapid multiplication of the epithelial cells and superficial connective tissue corpuscles of the diseased mucous membrane. The condition thus described is not always fatal, tubular casts of false

membrane having been found in the stools of patients, with the above-described symptoms, who have subsequently recovered.

"Another grave complication is diphtheria, with the formation of a similar false membrane in the fauces and respiratory passages. The membrane does not differ from that formed in ordinary diphtheria in civil life. The Museum contains several fine specimens. I have made a careful examination of the false membrane in a number of cases of this sort. It is anatomically similar to the false membrane of the intestine, and its origin is as readily traced to the epithelium of the mucous membrane, the connective tissue of which is, however, less frequently involved in the cell multiplication. The early stage of the diphtheritic affection, in these cases, is often associated with œdema of the glottis, which sometimes suddenly proves fatal before the formation of the false membrane. It may be mentioned in this place, that œdema of the glottis, with or without the formation of a diphtheritic false membrane, has been a not unfrequent mode of death in cases of protracted suffering from gunshot wounds. Other fatal complications of common occurrence in chronic diarrhœa are pneumonia, congestion of the lungs, serous apoplexy, Bright's disease of the kidneys, &c., &c.

"An interesting complication which has several times been brought to my notice in autopsies is the formation of metastatic foci, generally in the liver, but sometimes also in the lungs and spleen. These foci precisely resemble those which occur in pyæmia after gunshot wounds. I have met them in the bodies of men dead of diarrhœa, who had received no wound or injury, but who had extensive ulceration of the colon. These are the only cases in which, with propriety, '*embolism*' can be spoken of as a complication of chronic diarrhœa. The heart clots (death polypi), observed in the autopsies of this disease, differ in no respect from those so frequently occurring in patients dead of the most diverse affections, and even, under certain circumstances, in animals killed by violence; and all the evidence which careful investigation has hitherto accumulated on the subject is in favour of the opinion that they are formed during the death agony—consequences and not causes of the fatal issue. Ordinary abscesses of the liver, sometimes of great size, were not very rare, and a number of illustrative specimens have been received at the Museum. . . . .

"The papers above referred to contain also much interesting detail as to the *treatment* of these affections, which cannot be here introduced on account of its bulk. A few remarks may, however, be made in reference to the chronic variety. In this form, the two most important elements of treatment would appear to be diet and climate. The diet should be antiscorbutic. Fresh meat and broth made from it, eggs, milk, oysters, &c., are of the greatest value; but fresh vegetables also exercise a favourable influence. If the disease remains obstinate under this diet

and suitable medication, the patient should be transported to a non-malarial northern locality. As to medication, the whole range of vegetable and mineral tonics, astringents and alteratives have been employed with variable success. Among the remedies which have been brought into extensive use in this country for the first time during the present war, I may briefly mention subnitrate of bismuth, strychnia, and arsenic.

"Subnitrate of bismuth is perhaps the most generally available of these articles. The first paper published on its use in camp diarrhœa was that of Acting Assistant Surgeon J. B. Trask, who recommended it in both the acute and chronic forms. Dr. Trask advised the bismuth to be given daily in one large dose of from one to four scruples, which he regarded as more efficacious than its use in divided doses. He was very sanguine as to its success in all cases in which the patient was not actually dying when the treatment was commenced. He says: 'In not a case of the two hundred and seventy treated at Finley Hospital during the period named, and by this agent, was there a failure in promptly and radically arresting the disease, when given in the quantities and time as stated.' In September, 1863, Surgeon T. Rush Spencer, U. S. Vols., made an official report on the use of the remedy in seventy-six cases, sixty of which were chronic and sixteen acute. Seventy-one of these cases were cured and five still under treatment at the date of his report. The treatment in the successful cases lasted from one to eight days. Influenced by these and other reports, I myself tried the remedy quite extensively, and was cognizant of its use in a large number of cases of both acute and chronic diarrhœa. It generally showed itself a most valuable agent. In a few cases, however, tormina, tenesmus, and other dysenteric phenomena, with an aggravation of all the symptoms, followed its use, and in a very considerable proportion of the severe chronic cases it appeared to be wholly without effect. The subsequent experience of many surgeons in the field and in hospital gave similar results; so that while it must be admitted to be a quite useful remedy, especially when given in large doses, the extravagant expectations which were at first entertained with regard to it by some must be abandoned.

"Strychnia was also extensively used by some surgeons. It was given in the form of sulphate, or as extract of nux vomica. Very generally it was combined with quinine, or with quinine and iron, and proved valuable in many atonic and paralytic conditions of the bowels, but was far from being of general availability in the treatment of severe chronic cases.

"Arsenic in pill, or in the form of Fowler's solution, was more frequently useful, and by some surgeons this remedy was regarded almost as a specific. So far as I have been able to learn, it was chiefly available in cases complicated with chronic and malarial poisoning. The utter failure of these, or indeed any therapeutic agents, to command general confidence, or to come into general use, will serve to show how subordinate

their effect is to be regarded to that of proper dietic and climatic conditions."—Pp. 123-4-5-6.

"*Certain other Diseases.*—The most important affections reported under the head of *Enthetic Diseases* were the several forms of venereal. The reports give separate figures for syphilis, gonorrhœa, orchitis, and stricture of the urethra. The latter two affections being gonorrhœal sequelæ, may be grouped under the head of gonorrhœa. Of syphilis, there were 9,011 cases and 12 deaths during the first year; 13,781 cases and 27 deaths during the second—total, 22,792 cases and 39 deaths. Of gonorrhœa and its sequelæ, 14,768 cases and no deaths during the first year; 25,705 cases and 12 deaths during the second—total 40,473 cases and 12 deaths. The number of cases of all kinds of venereal was 23,779 for the first year, and 39,486 for the second, being 85 cases per 1,000 of strength for the first year, and 66 per 1,000 for the second. The ratio of venereal to the total amount of disease was one case of venereal to every 35 taken sick during the first year; one to every 41 taken sick during the second.

"If these figures be compared with the experience of other armies, we cannot fail to congratulate ourselves on the comparative exemption of our troops from these loathsome affections. The published statistics of the English army, for example, show that in 1859 there were 442 admissions to hospital for venereal among every 1,000 men serving in the United Kingdom; in 1860, 369 per 1,000; in 1861, 354; and in 1862, 330—being thus between one-third and one-half the whole number of admissions to hospital. It may be thought, perhaps, that the active occupations of a war carried on in an extensive and comparatively thinly-populated country will account for this difference in our favour; but the published statistics of the United States army from 1840 to 1859 give a mean annual rate of only 99 cases of venereal per 1,000 of mean strength during that period; and this, though larger than the rates above given for the first two years of the war, is less than one-third of the most favourable rate above quoted from the English statistics.

"When the frequency of venereal among the troops of the three regions is made the subject of comparison, it is found that in the Atlantic region the rate was 87 cases per 1,000 of strength for the first year, 61 for the second; in the Central region 60 per 1,000 for the first year, 63 for the second; in the Pacific region, rates are, however, attained which closely approximate those of the English army, viz.: 375 per 1,000 for the first year and 317 for the second."—Pp. 132-3.

"The plan employed in the photographic work, hitherto executed with high powers, is as follows:—The direct rays of the sun, reflected in a constant direction from the mirror of a Silbermann's heliostat (loaned for the purpose by the Coast Survey), are condensed by a large lens upon the plane mirror of the microscope, whence they are reflected

through the achromatic condenser in the usual way. Before reaching the achromatic condenser, however, the rays pass through a cell containing a solution of the ammonio-sulphate of copper of sufficient density to absorb nearly all the rays except those at the violet end of the spectrum. The light used, therefore, is essentially monochromatic, and contains, with enough illumination for agreeable vision, the greater part of the actinic force of the sun's rays. The heating rays being chiefly at the other extremity of the spectrum are of course excluded, and great actinic force is obtained, therefore, without any danger to the preparations or the balsam cementing of the object glasses. The object-glass employed in the photograph of Gyrosigma above alluded to, was a one-eighth of an inch, by W. Wales and Co., of Fort Lee, New Jersey. This glass is so constructed as to bring the actinic rays to a focus. At the bottom of the draw-tube was placed an achromatic concave lens—the amplifier of Tolles (of Canastota, N. Y.), and an ordinary medium eye-piece completed the optical apparatus. The eye-piece extremity of the microscope was thrust into one end of a long camera box, the connexion made light-tight by means of a black silk hood, and the image, received on a piece of plate glass, observed by means of a focussing glass, while the focal adjustments were made. As with the very long camera used, the arm of the observer cannot reach the milled head of the fine adjustment of the microscope, this head was grooved and connected by a band with a grooved wheel at the end of a long steel rod, the other extremity of which is near the observer, who, by means of it, can focus accurately with any required length of camera. There is nothing peculiar in the chemicals employed, and, with ordinary collodion, and the high power above spoken of, from thirty to forty seconds' exposure was quite sufficient.

"Of the foregoing devices, most importance is to be attached to the employment of monochromatic light (the violet end of the spectrum), and the use of an object-glass constructed with special reference to the actinic rays. Both these points were suggested to me by Mr. L. W. Rutherford, of New York, so well known by his connexion with telescopic photography, who has thought much and made many satisfactory experiments in this direction. I believe, however, that the apparatus, as above described, loses some of its advantages by the use of the eye-piece, which I propose to substitute by a lens of proper magnifying power, corrected, like the object-glass in such a way as to bring to a focus the actinic rays. Such a lens is now in process of construction for further experiment."—Pp. 148-9.

Circular No. 7 is also by Brevet Lieut.-Colonel Otis. It is a report on amputation of the hip-joint in military surgery, and is divided into an historical summary, an account of individual cases, a citation of the opinions of surgeons, and a discussion of results.

The historical summary, though brief, is complete. First, suggested by Moraud, a French surgeon, who studied in England about the year 1729, then opposed and defended, upon theoretical grounds, by many of his compatriots, it remained for Larrey to establish it finally as a feasible and successful operation. Kerr, of Northampton, had certainly performed it twenty years before Larrey, but in a case which was utterly hopeless. Setting aside certain doubtful or unauthenticated cases, 108 amputations at the hip-joint had been performed for gunshot injuries or their consecutive lesions prior to the American War.

"The recoveries were but ten in number—one after a primary, four after intermediate, and five after secondary operations—a percentage of mortality of 91·65."

In civil practice the operation has been followed by a much larger mead of success, as might naturally be expected, seeing that the after care which is possible in military surgery must, as a rule, fall far short of what can be attained in civil practice.

"Of the 111 amputations at the hip-joint in civil practice here recorded, 46 succeeded and 65 ended fatally—a mortality rate of 58·56."

In the late war there have been fifty-three authenticated instances of this operation—thirty-four in the United States armies, and nineteen in the Confederates.

The subdivision adopted for these fifty-three cases may be open to criticism, but we give it as it stands:—

"The fifty-three authenticated operations now to be described are divided into four categories—primary, intermediate, and secondary amputations, and re-amputations. Practical surgeons are very generally agreed at the present day that amputations for injury should be classified in at least three categories, according to the period at which they are performed, and that the old division into primary and secondary operations is insufficient. Beyond question there are three distinct, successive, and easily appreciated periods in which amputations are performed—the period between the reception of the injury and the appearance of the inflammatory symptoms; when inflammatory action has commenced and is more or less capable of disturbing the animal economy; and when the violence of the inflammatory symptoms and symptomatic fever have abated and the suppurative stage is fully established. Operations done in either of these periods differ widely in their attendant circumstances and in their results. It is important, therefore, that they should be grouped in separate classes."

"I have placed in the class of *primary* amputations those performed in the interval between the reception of the injury and the commencement of inflammatory symptoms, and I believe that, in cases of gunshot injury, the duration of this period will very rarely be found to exceed twenty hours. I have selected the epithet *intermediate* for the operations of the second class as being more conformable to our idiom than *mediate* or *intermediary*, and I have included in this category those amputations performed during the persistence of the inflammatory stage, a variable period, usually included between the day after the reception of the injury and some time in the second or third month. The *secondary* amputations comprise those performed at a period when the inflammation had abated and the lesions had become, in a measure, local and analogous to chronic disease, excluding the cases in which amputation had been previously performed in the continuity. I have placed those cases in which an amputation in the continuity has preceded the amputation in the contiguity in a fourth category, and have designated such operations *re-amputations*. It appears to me impracticable, even were it desirable, to restrict the term secondary, which has been so long used in a more general sense, to these operations. And yet it is important that they should be separated into a distinct class, because they are quite numerous and widely differ in the risk attendant upon them from other secondary operations. The term *re-amputations*, if awkward, is not likely to be misunderstood."

"*Primary Amputations.*—In each of the nineteen cases included in this category, amputation was performed within twenty hours of the infliction of the injury. Several of the operations were immediate amputations in the strictest construction of that term. The average interval between the reception of the wound and the operation was seven hours. Eleven of the patients succumbed to the direct shock of the operation, surviving from a half hour to ten hours. Three lingered for two days, and two for eight or ten days. One has survived the operation over four years, and is now in excellent health. Two so far recovered that they were known to be in good condition, in one case two months, and in the other six months from the dates at which the operations were performed. It is to be hoped that the subsequent histories of these men may be traced, and that it may be proved that the operations had permanently successful results. At present, these cases cannot be regarded as recoveries authenticated beyond all question. Excluding these cases, the percentage of mortality in the primary amputations at the hip-joint was 94·73. Including them, the mortality rate is reduced to 84·21."

Criticising these nineteen cases, the author of the Circular gives his opinion, that in three instances the operation was of absolute urgency; in two it was rendered necessary by the necessities of

transporting the patient; in five, though almost hopeless, it mitigated the patients' sufferings; in one it was plainly unjustifiable, being perfectly hopeless; and—

"In regard to the eight remaining cases in which amputation was done for injuries to upper extremity of the femur by musket balls, notwithstanding the one or two successful results, surgeons will not fail to discuss whether an equal or greater saving of life might not have been attained by an expectant or temporizing plan. Dr. Gilmore, who operated in three of these cases, and subsequently twice excised the head of the femur, and also treated a comparatively large number of similar injuries by the conservative method, declares as the result of his unusually extended observation, that recovery ensues in a far larger proportion of gunshot injuries of the upper extremity of the femur left to the efforts of nature than in such injuries treated by primary amputation or excision."

"*Intermediate Amputations.*—The eighteen operations included in this category resulted fatally. They were all done, of course, during the inflammatory period, and without exception upon patients who from unavoidable neglect and exposure were ill-fitted to undergo operations."

The question of operation at the intermediate stage is settled practically in one line—the eighteen done at this period all ended fatally.

"*Secondary Amputations.*—Of the nine cases included in this series two recovered and seven died, a percentage of mortality of 77·78. Three patients sank from the shock of the operation. One with a shattered constitution, with phthisis and lithiasis, died seventeen weeks after the operation, his stump nearly healed. One had secondary hæmorrhage and phlebitis subsequently, and succumbed in twenty-three days. One died on the tenth day from the giving way of the femoral at the point of ligation. One died on the third day with surgical fever and erysipelatous inflammation of the stump. Excluding the case in which death resulted from profuse secondary hæmorrhage, those patients survived longest in whom the operation was longest deferred. The average period the patient survived the operation in the seven fatal cases was twenty-two days. The shortest interval between the injury and operation was forty-three days; the longest was two years, nine months and twenty-one days. The average interval in the nine cases was four hundred and twenty-nine days."

"*Re-amputations.*—This category comprises seven cases, with the low mortality rate of 42·85—four patients having recovered. Of the three fatal cases, one died from pyæmia, eight days after the operation, and two, worn out by protracted suffering, were unable to support

the shock of the operation, and sank in a few hours. In six of the cases the antecedent amputation was done on account of gunshot injuries; in one, for a bayonet stab of the knee. . . . In six of the cases the previous amputations were done at the lower third of the thigh on account of injuries of the knee-joint. In one the exarticulation was subsequent to an amputation at the upper third for comminuted fracture of the shaft of the femur. In five cases resections of the necrosed extremity of the femur, or extractions of cylindrical sequestra, were practised in the intervals between the amputations in the continuity and the disarticulations."

One case, known as "Packard's Case," is so remarkable as an instance of what a human being can go through and not die, that we must give the details. Here we find a youth of nineteen sustaining first a perforating gunshot wound of the tibia; in a month he gets secondary hemorrhage, which necessitates amputation of the thigh in its lower third. Another month passes by, and with it another attack of secondary hemorrhage, stayed by ligature of the femoral in Scarpa's space. In less than three weeks necrosis of the femur calls for an operation to remove four inches of the dead bone. This does not stay the necrosis, and after a further lapse of two months the common femoral artery is ligatured after the manner of Professor Porter, and the rest of the femur is removed at the joint. In eight days secondary hemorrhage comes on again, and the external iliac is tied. This ligature separates in three weeks, with profuse hemorrhage, which was only controlled by a direct pressure for fourteen days. After this convalescence was rapid. Surely, both the patient and his surgeons earned well the final success which crowned their patience. It would appear from the results of this war, that the prospects of success are much greater where a portion of the limb has been previously removed. The shock to the system is more gradual and divided.

"Ten cases are on record of disarticulations at the hip-joint after previous amputation of the thigh in its continuity for diseases or for injuries received in the accidents of civil life.

"Eight of these patients recovered and two died, a mortality rate of 20 only. Grouping these ten cases with the seven re-amputations at the hip-joint of the war of the rebellion and with Guthrie's Ciudad Rodrigo case, a series of eighteen examples of removal of thigh stumps by amputation at the hip-joint is obtained, with twelve recoveries and six deaths.

"Of the general condition of those who recover after amputations at the hip-joint, as illustrated by the seven survivors of this operation during

the war, it may be observed that the progress of those who underwent secondary operations was similar to what is observed in patients who recover after amputations for disease. The functions of nutrition were promptly recuperated. Such a subject has been compared to a tree in which one of the principal branches has been looped off, and it has been supposed that the reparative material destined for the member that has been removed continues to be prepared by the digestive organs and gives greater vigor to the remaining portions of the organism. On those persons who have lost a lower limb a comparatively sedentary life is imposed, and hence another cause of a tendency to obesity.

"The rule is reversed in primary amputations for traumatic causes, after which patients commonly became emaciated rapidly, and long remain in a state of feebleness, from which they recover very gradually.

"Of the condition of the stumps of the seven survivors, it is known that in the case of Francis there are sinuses and other indications of disease of the innominatum. Longmore has neuralgia of the stump, and Smith suffers from a sense of congestion of the stump after being long in an erect posture. In the others the stumps are healthy. Ulmer alone wears, with comfort, an artificial limb.

"Of the changes that take place in the pelvis after amputation at the hip, our information is limited to the single case of the soldier whose thigh was exarticulated by M. Sédillot, on account of disease of the femur after a fracture by a fall from a window, who survived the operation twenty-two years. In this instance the acetabulum was obliterated, and its location was covered by a fibro-fatty substance. The articulations of the sacrum and coccyx were anchylosed and deviated to the right. The internal iliac fossa was abnormally hollowed. The anterior superior spine of the ilium was nearer than is natural to the sacro-vertebral angle, and the external wall of the os innominatum had become almost vertical."

We regret that want of space obliges us to defer for the present all notice of the memoir on gunshot wounds of nerves.

In Professor Paul Eve's paper of four pages we have a sufficient amount of matter. He is a favourer of the bi-lateral method of lithotomy.

Clinical Lectures on Addison's Disease, and a Report on Diseases of the Supra-Renal Capsules. By Edward Headlam Greenhow, M.D. London: J. W. Roche, 68, Paradise-street, Rotherhithe. 1866.

We have made rapid strides in special pathology during the present century. Many diseases have been described which were previously

either quite unknown or but very imperfectly recognized, and the diagnosis of many closely allied lesions has been rendered more complete.

Among these virtually, if not in reality, "new diseases," that which forms the subject of Dr. Greenhow's treatise has given rise to considerable discussion; and numerous and very various opinions have been advanced by different authorities concerning its true pathological character, and even with respect to the fact of its existence.

Now, although we think that, previous to the publication of Dr. Greenhow's work, the majority of those whose opinion was worth anything looked upon the existence of Addison's disease as an undoubted fact, we are quite alive to the importance to be attached to the very extended *résumé* of all that is known up to the present time concerning this disease presented to us by Dr. Greenhow.

The work contains a reprint of a report on Diseases of the Supra-renal Capsules, communicated to the Pathological Society of London by Dr. Greenhow, and also two clinical lectures on the same subject, which were originally published in the *Lancet* and *British Medical Journal.*

The object of the investigation on which the report was founded was to demonstrate the connexion between a certain train of morbid phenomena and a particular form of disease in the supra-renal capsules; in fact, to remove scepticism as to the reality of Dr. Addison's discovery. This scepticism is shown to have arisen from the occurrence of two classes of cases—1st, those in which there existed "bronzed skin" during life, and yet the capsules were found healthy on *post mortem* examination; and, 2ndly, those in which there was no discolouration of the skin, and yet the capsules were found diseased after death.

From an analysis of *one hundred and ninety-six* cases, which were either examples of disease of the supra-renal capsules or of bronzed skin without any supra-renal disease, it is shown that they are divisible into two categories. The one containing one hundred and twenty-eight cases in which the morbid change characteristic of Addison's disease was verified by *post mortem* inspection, and in the vast majority of which the characteristic symptoms and external signs of the disease were present during life. The other contained all the cases of bronzed skin without supra-renal disease, as well as those of all other morbid states of the supra-renal bodies, and in this category is included all cases either imperfectly described or

doubtful in nature; and these, with scarcely an exception, were destitute of the signs and symptoms of the genuine disease.

The cases belonging to both categories are arranged in a tabular form:—

"The first column in the table shows the number of the case for convenience of reference, together with the name of the reporter, of the publication from which the report is taken, and also that of the medical attendant on the case, when not himself the reporter. Then follow in order, in the subsequent columns, the sex, age, and occupation of the patient, the previous history and duration of the illness, the symptoms, the colour of skin, and lastly, the results of the *post mortem* examination, both as to the state of the supra-renal capsules and as to the condition of other organs."

The *sixty-eight* cases which form the second category are arranged in four tables, marked A, B, C, and D.

Table A contains all the cases of bronzed skin without disease of supra-renal capsules, amounting to *ten* in number. In only one of these cases were the symptoms of Addison's disease present during life, and in this case the defective description of the *post mortem* appearances renders it useless for any deduction. In the other nine cases the discolouration of the skin was wanting in all the characteristics which mark the genuine disease. Table B includes *twenty-four* cases of cancerous disease of the supra-renal capsules; twenty-two were true cancer, and never exhibited any of the signs or symptoms of Addison's disease, while the other two were instances of that disease incorrectly described as cancer. Table C contains ten cases of miscellaneous diseases of the supra-renal capsules, in only two of which was there any discolouration, and this was not characteristic.

Table D includes twenty-four cases so imperfectly described as to be useless for the purpose of argument.

Of the one hundred and twenty-eight cases of true Addison's disease which are included in the first category, forty-six were virtually uncomplicated; fifteen were complicated with vertebral disease or lumbar abscess; fifty-seven (=44·53 per cent.) were complicated with tubercular disease of different degrees of development and severity; and, finally, there were ten cases complicated with various non-tubercular diseases of the heart, liver, &c. (These are arranged in tables E to N).

Of the above cases the symptoms and discolouration of skin

existed together in seventy-two cases; in eleven there were well-marked symptoms, but only slight discolouration; in thirteen the discolouration was characteristic, but some or all of the symptoms were absent; twenty other cases presented either some of the symptoms, or some discolouration, or both; there remain only twelve cases, two of which were not observed during life; in the other ten phthisis, lumbar abscess, or other predominant disease were apparently the cause of death.

We fully concur with Dr. Greenhow's statement respecting the result of this analysis, "that rarely has a more overwhelming array of facts supported any scientific hypothesis than is here presented in support of the relation between a certain train of constitutional symptoms, attended by discolouration of the skin, and one particular organic lesion of the supra-renal capsules."

All ground for scepticism as to the existence of Addison's disease being removed, we shall proceed to give our readers an analysis of the remaining portions of the work, and in the first place, with respect to the *Semeiology* of the disease, we cannot do better than quote Dr. Greenhow's own description.

He says:—"The manifestations of its existence during life are clearly divisible under two heads—viz.: 1, constitutional symptoms; and 2, external signs."

"I. The constitutional symptoms are: gradually progressive asthenia, often originating without any apparent cause, and seldom dating from any definite period; great langour and indisposition for exertion, with, in advanced cases, breathlessness and palpitation, frequent sighing or yawning, and generally faintness on making any muscular effort, sometimes even on being raised up in bed. There is almost invariably great weakness of the heart's action and remarkable feebleness of pulse; loss of appetite; irritability of stomach, with nausea; and, towards the close of the illness, at least occasional, often persistent, vomiting. The mind is generally clear to the last, but so great is the prostration in the latest stage of the disease that the patient often lies in a drowsy, apparently semi-comatose state, from which, however, he can be roused by questions, and to these he generally gives pertinent, though slow and reluctant, answers. The above I should class as the most characteristic symptoms of the disease; but there are in many cases pains in the loins, hypochondria, or epigastrium; and, more rarely, dimness of sight, vertigo, and, near death, a tendency to incoherence or delirium. Death takes place from asthenia, and often rather suddenly. It is a remarkable fact that, notwithstanding the great debility which is the earliest and most constant symptom of the disease, there is, in uncomplicated cases, com-

paratively little or no emaciation. The skin also is soft and cool; the tongue usually clean and moist until the last days of life; the bowels seldom disordered, though sometimes confined; and the urine generally normal.

"II. The external signs of Addison's disease are found in the discolouration of skin, which, when present in a fully developed form, is, I need scarcely say, its most striking feature. It is true that in a recent case in this hospital, in which the discolouration was very slight, I ventured to diagnose the disease from the constitutional symptoms, and that diagnosis, as you well know, was verified by the *post mortem* examination; but, as a rule, the external signs have been the main ground on which this disease has been hitherto diagnosed. The discolouration of skin in Addison's disease is very peculiar, and gives to the patients in whom it is well marked the appearance of belonging to one of the darker races of mankind. Most frequently it is of a dusky or yellowish-brown, but sometimes rather of an olive or greenish-brown colour. The shade is not uniform on all parts of the body, but is generally darker on the face, neck, and hands, and in the axillæ and groins. The penis and scrotum and the nipples and areolæ are usually the darkest parts of the natural skin, and the discolouration of these last may be regarded as one of the diagnostic external signs of Addison's disease. If the patient have been blistered, or have sustained any other superficial abrasion of the skin, the injured surfaces are always darker than the surrounding parts, but the cicatrices of deeper injuries usually remain pale. Very often, also, small well-defined specks or patches of darker colour, resembling moles, are found upon the face, neck, arms, or trunk; but, so far as I have observed, they only appear on the already discoloured skin. Although the discolouration is generally most marked on certain parts of the body, and may even exist on some parts while the skin of other parts is of the normal hue, there is rarely, or never, any definite line of demarcation between the discoloured and normal portions of the skin; but the former fade insensibly into the latter. The characteristic discolouration is not restricted to the skin, but, in well-marked cases, is also usually found upon the lips in the form of an irregular stain running lengthwise, and upon the gums and buccal mucous membrane in the form of stains or patches; these last may, perhaps, when present, be considered as the most decisive of the external diagnostic signs of Addison's disease. It is, on the other hand, important to remark that the conjunctivæ always remain uncoloured, and in the more deeply discoloured cases their pearly whiteness presents a striking contrast to the dusky hue of the face. I may mention, by the way, that this discolouration of the gums and buccal mucous membrane affords another analogy between the discolouration of Addison's disease and the natural colour of the darker races; two Hindoos who were hospital out-patients of mine

having presented dark stains on those parts, exactly resembling the stains found in cases of Addison's disease. Moreover, in one of them I noticed that some superficial cicatrices were of a darker shade than the surrounding integument."

With respect to the existence of emaciation, Dr. Greenhow's more extended experience leads him to refer the emaciation, which is mentioned in the accounts of many of the cases of supra-renal malasma, published by Addison, Wilks, and others, to the existence of some complication, such as phthisis, or lumbar abscess. In uncomplicated cases, on the contrary, he has found the muscles firm, well nourished, and of a deep red colour, and, in many instances, considerable quantities of yellow fat has been found in different parts of the body.

Particular attention to the characters of the true discolouration is necessary, as various changes in the colour of the skin have been mistaken for that which is pathognomonic of Addison's disease. The absence of the characteristic constitutional symptoms; the existence of definite lines of demarcation between the darker and lighter portions of skin; the presence of dark spots, like moles, on healthy skin; the elevation of the discoloured parts above the surrounding cuticle, are indications of a spurious form of discolouration. The true bronzed skin is darkest on the face, neck, and hands, in the axillæ and groins, and on superficial cicatrices, while the spurious form is generally palest in these situations. The areolæ and nipples are always deeply discoloured in the genuine, but they are of natural colour in the spurious disease. When patches of discolouration are found on the lips, gums, and buccal mucous membrane they are to be regarded as diagnostic of the genuine supra-renal malasma.

We believe that the pearly conjunctiva, to which reference is made in so many of the cases published by Addison and Wilks, is very characteristic, and we think that where it is absent there is little doubt that the case is one of some spurious form of bronzing.

As regards the *Pathology* of Addison's disease, Dr. Greenhow thinks that it may sometimes, at least, originate in inflammation, and he was led to this view from the frequent association of caries of the vertebræ, lumbar, and pelvic abscesses with the supra-renal malasma, and from the existence of deep-seated lumbar pain at the outset of the disease. However this may be, the final result is the exudation of a low-organized fibro-cellular substance which is prone to degeneration, and which is allied to tubercle in the forms of

degeneration, to which it is liable. The frequent existence of tubercle in other organs lends favour to this view.

The relation of the symptoms to the diseased condition of the supra-renal bodies is a most interesting question, but one very difficult to determine. Our author regards the absence of any other disease, in the majority of cases, on *post mortem* inspection, as an argument in favour of the view that the disease and its symptoms stand to each other in the relation of cause and effect, and he inclines to the hypothesis put forward by Wilks and Habershon, respecting the part played by the sympathetic system in the production of the symptoms, but he has not found the enlargement of the supra-renal branches of the sympathetic and pneumogastric nerves to be a general condition.

At the time that Dr. Addison first met with this disease, he regarded it in the light of a form of anemia, and since that time other writers have spoken more or less of an anemic state of the blood. More recently, Dr. Hayden, in a paper published in this Journal, (Feb., 1865), goes so far as to say that "in all the cases in which the blood has been examined, it has been found to contain an excess of white corpuscles, and he regards the disease as in some degree allied to leucocythemia.

To this view, Dr. Greenhow cannot assent, as he has found the red corpuscles in excess, and in every *post mortem* which he witnessed, there were firm discoloured fibrinous clots in the right cavities of the heart.

The *post mortem appearances* present a considerable amount of uniformity, and they are thus described by Dr. Greenhow:—

"The diseased capsules are generally enlarged, hard, and nodulated. On section they scarcely ever present any trace of the distinction between cortex and medulla, or any remains of the natural tissue. It is evident that there has been an exudation which has obliterated the original structure. In a large proportion of the accurately-recorded cases, the appearance of the capsules on section is said not to have been uniform, but marbled by the admixture of two different looking deposits. One of these is semi-transparent, firm, and, when first cut into, of a greyish colour, rapidly assuming a pinkish hue on exposure to the air; the other is generally seen in the form of irregular roundish, opaque, yellow or cream-coloured masses, of more or less friable consistence, embedded in the translucent portion. Often, on careful examination, various gradations will be met with, intermediate between the translucent tissue and the opaque friable nodules, and sometimes there are harder portions of

cretaceous character, either in the form of granules or of larger masses. Sometimes, also, collections of thick, creamy fluid, called abscesses by some observers, are found occupying larger or smaller portions of the diseased organs, which, in exceptional, probably older, cases, are shrivelled instead of being enlarged, and contain only this fluid with a little cheesy matter, or else are hardened throughout into cretaceous masses.

"Under the microscope the translucent portion is generally found to consist of a more or less fibrous basis, mixed with much granular matter, containing shrunken cells and nuclei, some of the nuclei being occasionally elongated into spindle-shaped bodies. The yellow opaque nodules consist, in differing proportions according to circumstances, of amorphous granular matter mixed with irregular-shaped shrunken cells, nuclei, and oil. When the creamy liquid from cavities, or so-called abscesses, has been examined, it has been found not to be true pus, but to consist mainly of oily débris.

"In a large but uncertain proportion of the cases there were evidences of inflammation in the cellular envelopes of the capsules, such as thickening and firm adhesions to neighbouring organs—the diaphragm, liver, pancreas, vena cava, kidneys or stomach—and it is probable that these have existed more frequently than they are reported, but have been overlooked in making the *post mortem* examinations. In some cases it appears evident that the inflammation has originated in neighbouring tissues, and has spread from thence to the cellular tissue surrounding the supra-renal capsules; as in a case (No. 117) in which the patient had suffered from right lumbar abscess some years before his last illness, and, after his death from Addison's disease, a white, fibrous-looking, obliterated sinus was found to proceed upwards from the cicatrix of the former wound to the structures in which the right capsule was embedded. In this case, as well as in another (No. 115), in which the illness had originated in right lumbar abscess, the right capsule was obviously in a more advanced stage of disease than the left. Sometimes, at least, the history of the case seems to show conclusively that the inflammation producing the mischief had arisen from some external injury. In the last of the three cases prefixed to this paper (No. 129), the patient, some three years previous to the apparent accession of Addison's disease, had sustained an injury in the back, from which he had continued to suffer more or less pain during the whole intervening period. In this case, moreover, the injury sustained was on the left side of the spine, and the disease was clearly of oldest standing in the left capsule. In one of my own cases (No. 155) the patient had strained her back while turning a mangle, several years before her death, and dated the failure in her health from that injury. In a third case (No. 119) the patient had hurt his back by a fall eight years before, and caries of several vertebræ was found after

death. In these and other similar cases it appears impossible to avoid the conclusion that the supra-renal disease was secondary to the mischief produced by the local injury."

In only eleven out of one hundred and twenty-eight cases, was the disease confined to one capsule. Of those in which the disease was more advanced in one capsule, the right was farther advanced in twelve cases, while in thirteen instances, the left capsule was most diseased. Thus, we see that Dr. Hayden's observation with respect to the existence of a more advanced state of disease in the left capsule in all cases, is not borne out by a more extended experience.

The seat of the discolouration in Addison's disease is the rete mucosum, and in this respect, it is similar to that which is found in the darker races; this accounts for the fact, that it is only on superficial scars that the bronzing has been observed. The pigment is found in granular masses, arranged in well-defined layers, which follow the undulations of the rete mucosum.

Respecting the conditions which seem to favour the development of the disease, our knowledge is still imperfect, but Dr. Greenhow shows, by his analysis, that it is more frequently found in males than in females, and in the former it was found to occur at that period of life during which hard work was their lot, while in females, most cases of the disease occurred between the ages of fifteen and twenty-five; and, again, between those of thirty-five and fifty. Extremes of age seem to enjoy comparative immunity from the disease. It is most important to note the fact, that but extremely few cases have been met with among the middle or upper classes.

Dr. Greenhow regards this fact as confirmatory of his views as to the probable origin of the disease. He says:—

"Only eight males and three females, so far as can be gathered from the reports, have belonged to the middle or higher classes of society. The facts thus brought out are, the almost exclusive occurrence of this disease among the classes most liable to local injuries from accidents or over-exertion; its much greater comparative prevalence among persons of that sex which is most exposed to these causes of injury; and the pretty equal distribution of the mortality caused by it over the active period of life, to which it is almost entirely confined. These facts appear, at least in some measure, confirmatory of the opinion I have already expressed, based on the history of individual cases, that the origin of Addison's disease of the supra-renal capsules is due, in a hitherto quite

unsuspected degree, to the extension of inflammation to those organs from diseased or injured adjacent parts in persons of a tubercular diathesis."

With respect to *treatment*, something may be done to delay the progress of the disease by combating the asthenia with rest, tonic treatment, and nutritive diet. Excessive exertion and the use of drastic cathartics hasten the fatal issue. Vomiting must be checked by some such remedies as ice, Prussic acid, &c.; and Dr. Greenhow speaks highly of the use of chalybeates, cod-liver oil, and glycerine.

In conclusion, we heartily commend Dr. Greenhow's valuable little treatise to the attention of our readers; the labour, which has been so successfully accomplished, of collecting and arranging such an imposing statement of facts respecting a comparatively newly described disease, must be more than rewarded by the consciousness that he has thereby most amply fulfilled the object he had in view when he commenced his task, namely, "to establish the reality of Dr. Addison's discovery, in order that future inquiries, starting from what is known, may be directed towards the elucidation of the true nature and causes of Addison's disease."

The Principles and Practice of Medical Jurisprudence. By ALFRED SWAINE TAYLOR. London: John Churchill and Sons, 1865. 8vo, pp. 1186.

Principles of Forensic Medicine. By WILLIAM A. GUY. Third Edition. London: Henry Renshaw, 1868. Small 8vo, pp. 655.

MEDICAL students during their years of pupilage doubtless are guilty of many vices—some, we fear, of commission, the majority, we hope, of omission. With those of commission, on the present occasion, we have nothing to do. Of some of those of omission, however, as incidental to a consideration of the works before us, we must speak, inasmuch as the subject of which they treat, is perhaps, of all others in his curriculum, that most neglected by the medical student; and, strange to say, it is equally neglected by the two great classes into which medical students may be resolved—the industrious and the idle—and, stranger still, any one member of either of these two great classes would give diametrically opposite reasons for neglecting this study, the industrious student accounting

for his neglect of medical jurisprudence by stating that its study was too simple, inasmuch as it involves but the application to practice of all the other objects of study to which he has hitherto devoted his attention; whilst the idle student would excuse his neglect by alleging it to be too comprehensive, involving in its successful mastery a pretty accurate acquaintance with every department into which medical science is subdivided. And perhaps, strangest of all, in this view of the subject, the idle student has the advantage of the more industrious one in the argument, as we shall proceed to show, though neither can for one moment be excused for non-devotion to a study, ignorance of which may hereafter ruin his prospects as well as his self-respect and happiness in this world.

A student, who has earnestly worked in his medical and surgical wards and in the chemical laboratory, may well imagine that he is master of all the usual appearances of medical and surgical diseases, and that he is fully capable of recognizing, by their appropriate tests, all the ordinary poisons, and yet may he prove a specially bad medical jurist. We speak not now of a medical witness, but of a medical jurist; and of the truth of this statement numberless proofs could be adduced. How many are the students who carefully examine into the condition of a bad compound fracture, subject the limb to the most minute clinical investigation, and who never dream of examining the patient's clothes, and yet upon such an examination may hereafter hang questions of life and death! Such a man may be competent to pronounce an admirable opinion as to the propriety of primary or secondary amputation, but certainly as a medical jurist he would signally fail.

Again, a man may be an admirable toxicologist, be capable of detecting the presence of arsenic or strychnia in infinitesimal proportions even in organic mixtures, and yet from inattention on his part to some trifling minutia, the most flagrant criminal may escape the bounds of justice. Every test may be conclusive, but the one connecting link be wanting, and all this from neglect of a study which "will he nill he" may be forced upon his consideration. Men may devote themselves to a specialty—some to surgery, some to medicine, some to midwifery—and consequently claim an exemption from all other pursuits; but no one, no matter what be his specialty, can hope to get through an active professional life without, at some one period or other of it, figuring on the green cloth as a medical witness; and to do that with credit to himself and

with advantage to the community, he must make medical jurisprudence a portion of his study.

Having mastered the study of medical jurisprudence, another task remains—to become a good medical witness. How often does it not fall to our lot to witness an honourable, high-minded, accomplished physician or surgeon making a miserable exhibition of himself and of his profession in the witness box! and all this from want of previous education in this department of his professional duties. 'Tis true that all medical witnesses have a great difficulty to contend with—a difficulty that never is readily acknowledged by their examiners, and that is the most profound ignorance, on the part of the *profanum vulgus*, of all matters medical—a difficulty much enhanced by the use, on the part of medical witnesses, of medical terms—terms familiar to them, and with which they fancy every one should be familiar, but of which the public are all profoundly ignorant. Never can we forget a scene in court of which we were once witness. When in a disputed insurance case, the term "rusty sputa" was used by the medical witness in describing the phenomena of pneumonia; "rust*a* sputa" was over and over repeated by the barrister, and the Court, who, with the greatest difficulty, were at last made to comprehend this most incongruous piece of medical nomenclature. Another and still graver offence, on the part of the medical witness, is taking up the position of an *advocate* and abandoning that of a *judge*, which should be his proper function. The medical witness, on all that concerns the medical portion of the case, should be a *judge*—he should be above all prejudice; his evidence should be decisive, founded on truth, and irrespective of either side. "To tell the truth, the whole truth, and nothing but the truth;" as it is his obligation, so should it be his study. No matter whether it acts for or against the side upon which he is employed, it is his duty to tell it, and eventually by so doing will he gain the greater reputation, and, above all reputation, will he gain the reward of an approving conscience. Nothing tends more to injure our profession in public estimation than seeing its members appearing in our courts of justice as partizans. One set of medical experts appearing as the supporters of one view of the case, whilst another equally warmly advocates the very opposite. That there are always two sides to a question may be accepted as a truism, but truth must lie on one side rather than on the other; and what is to be deplored, so far as medical science goes, is that our members should be pitted against each other in support of

views diametrically opposite The time will surely come when all such questions will be submitted to the decision of a tribunal competent to decide knotty points of medical jurisprudence—a tribunal composed, really in the truest sense of the words, of *medical experts*, who will not permit themselves to be led away by medico-legal sophism, and in whose eyes medico-legal sciolism will find no favour; until this, the good time comes, it behoves our professional brethren to provide themselves with works which will enable them to acquit themselves with credit in such emergencies; and it is rather a proud thing to state that English literature affords them two distinct treatises upon this subject to select from, either of which may confidently be looked upon as being up to all their requirements.

The really magnificent work of Dr. Taylor is an amplification of his previous treatise on medical jurisprudence, which had already passed through seven editions. In stating this fact, the duties of the reviewer may be considered as discharged. A work which has successfully passed the ordeal of seven successive editions is independent of any editorial praise, but we cannot deprive ourselves of the pleasure of congratulating Dr. Taylor on having added to our medical literature a work which for years to come must be looked upon as one of our standard classics—a mine into which labourers yet to come will sink many a reproductive shaft. In the present work, however, subjects are discussed at far greater length, more exhaustively, than its limits would permit to be done in the manual. Many such topics might be adduced in evidence of the truth of this statement; we shall content ourselves, however, by referring our readers to the observations on medical evidence, life assurance, and spontaneous combustion. In stating our conviction that this work will be found on the shelves of every criminal barrister in any practice, we think we will have said quite sufficient to show the urgent necessity that exists for any medical man who goes into a court of justice as a witness, to make himself also familiar with its contents.

Dr. Guy's work, whilst not so pretentious, is, perhaps, more suited for the actual requirements of the student; thoroughly up to the *facts* of medical jurisprudence, it is not so full of details, and it appears to us to be more suited for employment as a handbook for reference by the student employed in attendance upon lectures upon these subjects. Both works are profusely enriched with illustrations, and either will amply repay the study expended upon their perusal.

Gout and Rheumatism in relation to Disease of the Heart. By A. W. BARCLAY, M.D., Cantab. and Edin.; Fellow Roy. Coll. Phys.; Physician to St. George's Hospital, &c. Pp. 214. London: John Churchill and Sons.

DR. BARCLAY'S attention to the subjects of gout and rheumatism and the investigation of these diseases, are not, as he reminds the reader in his preface, of recent date, since, as Medical Registrar at St. George's Hospital many years ago, he had paid particular attention to these very subjects. The results of his observations at that time, made on the numerous cases which passed under his notice, have been published in the 31st and 35th volumes of the "Transactions of the Royal Medical and Chirurgical Society," and have been placed before the profession as the groundwork of the rules for diagnosis in his "Manual of Medical Diagnosis," for the use of students.

The work before us is, manifestly, the produce of no hasty premature opinions—of no crude suggestions of an untrained mind—of no book-making mania, so seductive to many in these days—but the result of many years' hospital experience, and careful and thoughtful study of these particular subjects. It does not, however, treat of them exhaustively, nor of many of their most interesting and intricate phases, but mostly on their bearing and relation to disease of the heart. Dr. Barclay prefers this method to adding another to the already existing monographs on heart disease. His views on the subject of gout are not in harmony with those of many who had contributed much to our present knowledge; yet still M. Trousseau, Dr. Gairdner, and others have already expressed much that is in accordance with his own.

While to Dr. Garrod we owe the certainty of the existence of an excess of uric acid in the blood during a gouty paroxysm, and its absence in rheumatism, yet

"It is far too mechanical a view to suppose that gout is nothing more than an accidental excess of uric acid in the blood: that the inflammation of the joint is simply the effect of the same acid in the form of urate of soda exuding through the vessels, and irritating the ligamentous and synovial structures. The fallacy of such reasoning becomes more apparent when we find Dr. Garrod asserting 'that true gouty inflammation is *always* accompanied with a deposition of urate of soda in the inflamed part.' So far as it is possible to trace the reasoning by

which such a conclusion is arrived at, it might be stated as follows:—Gout is essentially known to us by the inflammation of the joints, and this consequently is true gouty inflammation. Any joint so attacked has been found on examination to bear traces more or less distinct of the deposit of urate of soda. Hence all true gouty inflammation is accompanied by this deposit. I need only appeal to Dr. Garrod's own logical faculty to admit the fallacy of the argument so stated, and I do not find that he has anywhere brought forward further proof of his assertion.

"It is indeed quite true that in the case of the joints we find the existence of gout, the local inflammation, and the deposit, all harmonizing together; but does it necessarily follow that if, during the existence of gout, inflammation of any tissue does not present the same deposit, it must be excluded from our idea of the disease? Must we of necessity find urate of soda in the stomach and the bronchi before we can admit gouty gastritis or gouty bronchitis? Must we again assume that as 'the deposited urate of soda may be looked upon as the cause, and not the effect of the gouty inflammation,' no gouty inflammation can occur till such a deposit has taken place, and that it must have happened wherever it exists? Such assumptions make large demands on our belief, and to me it appears that the very fact that urate of soda is not found in parts such as the bronchi, where an inflamed condition of the membrane is so often associated with gout, is of itself a proof that 'true gouty inflammation' is not always associated with or caused by the deposit. This conclusion acquires additional force from the consideration, that though the deposit and the inflammation are associated together in the joints, the urate of soda is seen in other parts without any evidence of its exciting inflammation there."

There must be something more than the chemical agency at work—the hereditary tendency, the suspension of the functions of the kidney during the attack without any evidence of disease, the sudden cutting short of the disorder by specific medicines, and not by medicines chemically suited, as well as the pathological conditions found in the albuminous urine, the degenerated kidney (hence called gouty by Todd), the enlarged or cirrhosed liver, all which are sometimes found associated with gout, and, again, as often found to exist in cases entirely free from gout—all point to something more than mere excess of uric acid in the blood as the cause, something further back which can produce these degenerations.

Dr. Barclay in his views on this subject concurs with that of M. Trousseau, although no mention is made of the latter. He cannot believe that the excess of uric acid and the urates constitutes the *materies morbi*, for if such were really the cause of

the disorder, they ought to appear in gout, and gout alone. This is evidently not the case; for besides the fact—which Dr. Garrod has himself demonstrated—that uric acid exists in the blood in persons in perfect health, in variable quantities according to the time which has elapsed since the last meal, he mentions other diseases in which uric acid and the urates are found as well as in gout. In the first stage of intermitting fever the uric acid diathesis can be discovered by making an analysis of the blood.

"These results," M. Trousseau says, "will not permit the acceptance of the identity which they wish to establish between the gouty diathesis and the uric acid diathesis, since this diathesis is only one common to different diseases which have this point only in common." He further says—"La production de l'acide urique et des urates en excès est un phénomène pathologique inhérent à la maladie comme tous les autres, et comme tous les autres il est dominé par une cause spécifique, que nous ne connaissons que par ses effets, et que nous appelous la *diathèse goutteuse*."[a]

For this "specific cause" Dr. Barclay looks to the blood:—"The first change must be in the molecular structure of the blood itself."

Looking at the analogy which seems to exist between the kidney affection, the degenerations of the liver, and other tissues in the body found in gout, and those produced by the excess of alcohol in the drunkard, he says:—

"It seems impossible to doubt that the first departure from health, or at least from a condition compatible with health, must be found in an altered condition of the blood. It is to be remembered that there are several series of changes going on in that fluid from day to day, some of which are quite transitory, while others are more or less permanent in character. First we have changes in the condition of the serum, which are in progress every hour; it contains more or less water, saline substances, nutritive material in a state of solution, and effete matter. In a very few hours a large quantity of water may be got rid of by violent perspiration, excessive kidney secretion, or bowel flux. A very few minutes serves for the transmission of a saline substance from the stomach to the kidney, where it may be traced in the urine; and if taken in larger quantity, two or three hours will suffice for many salts to pass off by the bowels. Excrementitious particles are more slowly got rid of by the various secretions, and the nutritive elements probably remain a very much longer time before they are converted into tissue of any kind;

[a] Clinique Médicale, par A. Trousseau; Troisième Ed.; Tome Troisieme, p. 352.

and no doubt a considerable amount of this material never gets any further than the blood, but it is used up there for other purposes—that of respiration, for example—without ever being actually and directly applied to nutrition. Another series of changes is connected with the formation, alteration, and disintegration of blood globules and colourless corpuscles. That these are sometimes very rapid in their progress I see no reason to doubt, but still they must be regarded as being more stable and permanent in their character than the changes which go on in the blood-serum. Now it would appear that the various stimulants taken up into the blood and passing round in the circulation act in one man more injuriously on the brain, in another on the liver, in another on the kidney, and as a consequence of this injurious action being long continued and repeated, serious, or even irreparable organic change at length takes place. In the very same way I think it must sometimes happen that the blood globules themselves are injuriously affected, as, for example, by the repeated introduction of the gout-producing elements into the circulation."

This hypothesis requires as yet the means of being confirmed or contradicted, and so far as a speculation its value is but little, but when we turn to the treatment of the disorder it ceases to be profitless. According to the above view the retention of uric acid is but a symptom or consequence of the attack of gout, and not its cause. The good living and the stimulants do not simply cause an excess of uric acid to be formed, but they end by causing some more permanent change, and, probably, one affecting the blood globules ; which reacts on the kidney, putting a stop to the excretion of uric acid, and causing its retention in the serum, where, passing in the round of the circulation, it is very apt to become deposited as urate of soda. According to the chemical view, a perfect alkalescence of the blood and urine ought to arrest the disease; yet, experience tells a different tale, for no amount of artificial alkalescence will put a stop to the paroxysm when it has once commenced, and in old standing cases the subacute inflammatory condition will last for months, in spite of all alkaline treatment fully and fairly carried out. Dr. Barclay does not by this mean to deny " the great benefit of the alkaline treatment as a prophylactic, and as a remedy to prevent worse evils following in the train of the disorder, but still it seems only to modify the severity of the seizure without arresting its progress. While the shortest experience in treatment proves, beyond all question, that when, in acute gout, colchicum is *first* administered, its action is something perfectly different from the effect of the administration of alkalies. By this remedy the disease appears to be immediately

arrested, the existing inflammation subsides, no fresh joint is attacked, and in a few days the patient is well."

In Chapter II., when discussing the relation of acute rheumatism to disease of the heart, he is almost necessarily led beyond its immediate relation to call attention to the confusion which, alas, only too generally exists in the minds of members of the profession on the subject of chronic rheumatism and gout. He gives Dr. Adams all the credit he deserves for the distinction between these diseases, and very properly repudiates the term—too often the cover of ignorance—rheumatic gout. It is much to be desired that "rheumatic gout" should be wholly banished from medical nomenclature as being one of those terms which only give rise to confusion and impede advance.

The proportion of cases of acute rheumatism in which the heart is affected has varied greatly from the time of Bouillaud to the present. The per centage of cases of carditis, according to that great physician, was as high as eighty-six. Dr. Barclay's own observations, fifteen years ago, as published in *Medical Chirurgical Transactions*, gave forty-four per cent. For the fact that Dr. Fuller, a few years previously to Dr. Barclay, in the same hospital, gave a higher per centage, and Dr. Dickenson, recently (1862), gives a still lower, we must look for an explanation to the improved method of treatment, and to the fuller and more perfect acquaintance of the physician with the disease. Age seems to have the most important weight as to the chance of heart complications, as in childhood it may be said, any rheumatic attack presenting febrile symptoms is likely to be accompanied by inflammation of the heart, while after adult life is complete, a very marked febrile and inflammatory character must accompany the disorder before there can be the smallest probability of cardiac inflammation.

The question of discriminating an anemic murmur from an organic one, while it is acknowledged to be a difficult one at all times, is peculiarly so when in the course of acute rheumatism it makes its appearance for the first time. On this subject Dr. Barclay's remarks are very sound and instructive. His opinion as to situation is, "that functional murmurs are especially vague in their site, and that it is almost impossible to fix on any spot where they attain a maximum of intensity; whereas organic murmurs always have a point of origin and of greatest intensity, with the single exception, perhaps, of some regurgitant aortic murmurs."

Until recently an anemic murmur occurring at the apex has been

always set down to an organic change. A more accurate acquaintance with the use of the stethoscope has shown that such a murmur does sometimes exist, and has for its cause perhaps, most frequently, the effects of acute rheumatism. Dr. Barclay's explanation of blood murmurs heard in the heart, and the conclusions he has been led to by his auscultatory experience, we subjoin in his own words:—

"Much confusion seems to me to exist in the minds of writers on this subject, because of their assuming that a blood-murmur must be produced at a valvular orifice. If the valve be sound it has really nothing to do with it, and any theories which attempt to explain its production by alterations in the form of the heart, or by perverted innervation or disordered contractility of the valve are really useless. It matters not whether the patient be blanched in appearance or have a florid aspect; if a blood-murmur can be produced by slight pressure on the carotid, a similar murmur must be produced in the heart. There is no roughness or unevenness of surface in the carotid, there is merely a narrowing of the passage, so there need be no roughness or unevenness at the outlet of the heart, the mere narrowing of the channel must of itself be sufficient. And when the tendency to be thrown into vibration is great, it need not be restricted to that situation. In point of fact, the vibration is very generally produced before the blood reaches it. Careful auscultation will generally trace it in the cavity of the ventricle itself, probably excited there by the contact of the muscular bands which everywhere project from the surface.

"Attention has been of late turned to this point, and various suggestions have been made as to the mechanism of murmur at the apex which was not dependent on organic disease of the mitral valve. Many years ago it came under my own consideration, before I had seen any notice of the subject by others. I had been taught that a murmur at the apex indicated mitral regurgitation, and that mitral regurgitation implied valvular lesion, and I was forced to unlearn this teaching by unbending facts. In its place the following conclusions were arrived at from the observation of a large number of cases, and they are here suggested for the consideration of others, though they cannot be regarded as proved. First, that mitral regurgitation does always imply insufficiency of the valve, but not always disease. Secondly, that a murmur at the apex does not always imply mitral regurgitation.

"But if there be not regurgitation, how are we to account for murmur at the apex? The answer must necessarily be hypothetical. In examining with great minuteness all the blood-murmurs that came before me, the first and almost inevitable conclusion was that they did not present the character of having any definite point of greater intensity. Further, that though diffused, there was very generally a limited area in which,

though not quite local, they were heard louder than elsewhere: and that this was sometimes at the second intercostal space, sometimes over the centre of the heart, sometimes towards the apex. It was then noted that these regions of greatest distinctness corresponded to intercostal spaces, and I arrived at the conclusion that this was one of the localizing circumstances. It was further observed that when the murmur was heard very distinctly at the third, or more especially at the fourth intercostal space, and less distinctly at the second, the breathing sound was audible at the higher point, and absent over the surface of the heart; and that the further down the breathing was audible, the more did the blood-murmur seem to be produced at the apex. In short, the conclusion arrived at was that though functional murmur is most commonly heard when the blood passes from a cavity to a tube, yet it may also be produced in the cavity itself, and that the chief localizing circumstances are these: first, its tendency to be produced at the commencement of a tube, whether aorta or pulmonary artery; second, its being loudest when the lung did not interpose between the blood and the ear of the listener; thirdly, its being more readily transmitted through the intercostal space than through the rib."

Of the beneficial effect of alkalies in the blood, as preventive of cardiac complication, Dr. Barclay has no doubt, though as to how this is brought about he offers no explanation. The converse of this treatment—that is, the omission of alkalies, as exemplified in the mint-water treatment of Dr. Gull in Guy's Hospital—presents a sad contrast. Although statistics are at all times troublesome things to deal with, and too often fallacious guides, yet still, when made on similar cases in London hospitals, the results of comparison throw considerable weight into the scale against the do-nothing system of Dr. Gull. Of forty-one patients subjected to the mint julep treatment, there were eleven in whom the heart was known to be diseased, and included six cases of pericarditis; while in forty-eight cases put under the full alkaline treatment, as published by Dr. Dickenson, only one had pericarditis commencing after treatment was begun. Although some of the former cases of inflammation had commenced before admission to hospital, yet the difference between the two, admitting all possible contingencies, is still too much in the favour of the latter method.

Dr. Barclay's own experience asserts:—

"I may say with confidence, that in my own practice, the lighting up of inflammation of the heart, after the system has been fully brought under the influence of the alkali, is one of the rarest events in pathology.

This experience, to one who has been in the habit of watching the condition of the heart in all the cases of rheumatic fever in the same hospital fifteen or twenty years ago, is most striking, and needs no confirmation from statistical calculations."

The chapter devoted to the inquiry into the so-called metastasis of gout is worthy a more full analysis than we can give it, as it puts the erratic character on its proper footing. In a person predisposed to the complaint, the joint affection in gout may come on, we know, excited by some blow or strain, or without any such exciting cause. Experience teaches us that the cause, be it what it may, operates sometimes on one joint, sometimes on several, attacking them either simultaneously or in succession. The inflammatory action, when it does not pass a certain stage, leaves the joint to all appearance just what it was before the attack, in a very few hours after the irritant ceases to act upon it.

"A very analogous process is seen in the disease known as pyemia. Here, again, there is some material circulating in the blood which tends to produce local disease in various parts of the body, which are attacked either together or at successive periods: inflammatory action is set up, and the tendency of that inflammation is to the formation of pus. When pus is really formed, a considerable period must of course elapse before there can be a return to a state of health, even under the most favourable circumstances; yet instances constantly occur in which some one or more of the parts attacked never pass beyond the first stage, and all trace of inflammation subsides in a very few hours. I do not know that any theory has fully explained why pyemia attacks one organ of the body more than another; but there must be some localizing influence that determines it to the skin in one person, to the liver or the lungs in another. Here the analogy seems almost perfect, and may perhaps help in suggesting an hypothesis which will serve to guide our views to some extent in considering the transition of gout. Let us not, however, carry it too far: the collections of pus once formed in a case of pyemia are very different from the gradual accumulations of urate of soda; and the one disorder attaches itself to its victim for life and descends to his posterity, while the other, when subdued, quits its hold altogether. But just as in pyemic cases, patients may escape the pus-formation in some of the inflamed centres; so it seems highly probable that sometimes in gout the attack may be so transient as to leave no trace of chalky deposit.

"If these two considerations receive their due weight, we shall have no difficulty in accounting for the rapid transference of its attacks without the necessity of assuming that its subsidence in one part is necessarily connected with its appearance in another."

We entirely agree with Dr. Barclay in his disapproval of the continuance of a phraseology which supports hypotheses having no foundation in fact, but which are kept up by the language in which they are couched at the present day, and which tend to lead away the mind from the realities with which alone medicine ought to deal. It is inconsistent with our advanced knowledge of pathology to suppose that if an internal organ be affected, while the joint simultaneously seemed to return to a state of health, the disease had departed as an entity from it, and fixed itself on the internal organ.

In cases of gout the series of symptoms referable to the heart differ very materially from those in connexion with acute rheumatism. The liability to inflammation is very slight, and the occasional deposit of lithate of soda seen on one or other of the valves is no evidence that it resulted from inflammatory action, but like the gouty incrustations on the external ear, it is only one form of mal-nutrition attendant on the diathesis. The valves are generally atheromatous, if any disease be present, and there is never any trace of the previous existence of pericarditis at all analogous to that which remains so often after acute rheumatism. As M. Trousseau remarks, it is not the endocardium which is first attacked, but the tissue itself. The affection has, as regards the heart, the same transitory character as in other parts of the body: sometimes characterized by spasm, which lasts but a very short time, and seems of such intensity that life must cease if immediate relief be not obtained; sometimes seen in irregular action which may last for days; but in either case leaving no trace of its past existence in organic change. Should, however, the organ be previously damaged, the danger and importance is much augmented, especially in feeble or fatty hearts, when the walls are degenerated. This spasm of the heart, the only other we know to Angina, throws the sufferer into perfect prostration; yet differs from it, for while in the one sudden death is not infrequent, in the other it is comparatively unknown.

In closing his remarks on the treatment of gouty affections of the heart, which are rather on the indications for treatment than the treatment itself, he lays great stress on the effects of colchicum. He warns his readers against the almost certain injurious effect that drug produces when administered to patients in whom gout has attacked an internal organ. The striking effect colchicum has in arresting early attacks tend to make the physician sometimes

forget the general symptoms of frequently repeated attacks of gout; and he strongly advises that in such cases our efforts should be directed to restore healthy secretion before attempting to arrest the disorder.

The perusal of this little work has given us much pleasure, and we are sure a book, so evidently the result of much time and sound thought, devoted to the subject of disease of the heart, will win the attention of every reader, and suggest to his mind much material for consideration.

A Compendium of Practical Medicine and Morbid Anatomy. By William Dale, M.D., Lond.; M.R.C.S.E. London: John Churchill and Sons. 1868. Duodecimo.

To those readers who wish only to get a smattering, superficial acquaintance with disease, its pathology and treatment, and have no time or inclination to study the matter deeply and soundly, a small book on medicine is always acceptable. Dr. Dale, in the preface, says he hopes that his compendium may come under the head of being "little." We certainly think he has attained his object, as in 467 pages he has treated of the symptoms, physical signs, treatment, morbid anatomy, and, in many instances, the history of almost all the diseases found in nosological works, with the exception of diseases of the skin, eye, and ear. It cannot, therefore, be wondered at if there be a great superficiality, and if, in the desire to be concise, omissions be found—and this, we must confess, we felt as we read its pages. It is, not, however, without its merits, as in many places we read with pleasure the results of Dr. Dale's note-books, or, he says, "the gleanings compiled from the works of others and the periodicals." We regret, however, that some of the most recent and instructive discoveries in the pathology and treatment of disease should be altogether passed over unalluded to, and diseases the most important and abstruse dismissed in a few lines. For instance, one page only Dr. Dale devotes to the subject of hemiplegia, while even more than a page is given up to the description of the laryngoscope, an instrument in the hands of, and thoroughly understood by, every intelligent physician and surgeon.

Besides numerous typographical errors, which a little more careful attention to the proofs might have avoided, we find his style too loose and inaccurate, especially in his chapters on the nervous lesions.

Beyond mere allusion to the epidemic of cerebro-spinal meningitis which commenced in Ireland in 1866, and of which we have still many cases lingering amongst us, no practical information is given, nor is that peculiar feature of purpuric eruption, which has given rise to so very general interest throughout the country, discussed.

Again, his description of epilepsy and locomotar ataxy are very poor and faulty, as in that of the former the *petit mal* is not mentioned, and in the latter he has evidently not been practically and personally acquainted with this interesting malady.

Without wishing in the least to make little of Dr. Dale's exertions to write a book, nor overlooking the many well-written passages and the sound treatment detailed therein, we must, however, say that in our opinion such a book was not wanted to fill a gap, since many similar books of equal, if not greater, pretensions, exist under the names of "Vade-me-cum Manuals," and must only end in being added as another to the already too long list of superfluous literature to be found in our profession.

First Principles of Medicine. By Archibald Billing, M.D.; F.R.S.; &c. Sixth edition, Pp. 714, octavo. Bell and Daldy. 1868.

We feel it quite unnecessary for us to make any lengthened review or critical analysis of a work which has reached its *sixth* edition, and which has already been translated into two foreign languages, as well as republished in America. Dr. Billing's views have been now in print for many years, and while they have not gained, and, we venture to say, never will gain, in every point universal assent and agreement, still they commend themselves to the reflective and cause-searching members of our profession, as well for their actual clinical value as their originality. As a book on the practice of medicine, it deals with disease as something more than a name, and tends to stimulate the reader to a more accurate observation of the ills that man is heir to, and a more reasonable consideration of the remedies and treatment required for their cure or alleviation.

Although this work, as plainly indicated in its pages, has for its author a man possessing a well-educated mind, of extensive literary attainments, and reasoning, thoughtful disposition, we

can see plain evidences of ignorance, or, at best, defective appreciation of some of our most recent physiological discoveries and therapeutical researches, and we cannot but feel disappointed with the manner in which the writer deals with others whose opinion differs from his own, showing as he does too often a spirit of egotistic dogmatism, and unkind sarcastic raillery, instead of that humble, indulgent manner in which our greatest writers are wont to treat those at variance with them.

Dr. Billing still maintains his original views on cholera unaltered. He considers it a fever, and his treatment is sedative (in opposition to that of elimination by castor oil and other purgatives) by one-tenth of a grain of tartar-emetic and twelve grains of sulphate of magnesia every half hour. The remarks on heart disease, and the information as to the sounds of the heart, are excellent, placing them in their proper light, and giving them their due significance as indications for treatment. We observe, however, that the "pre-systolic bruit," so much talked of just at present, and of which every careful observer ought to be satisfied in his own mind, finds no place in his account of the murmurs. The chapters on hysteria and mental disease, so far as they go, are newly written and well handled, well worthy the attention of those interested in such subjects.

Lectures on Venereal Diseases. By W. A. Hammond, M.D.

Venereal diseases have been the theme of many discourses from the earliest times, without, however, producing much effect, either upon their frequency or severity. Fortunately an influential society has at length sprung up in Britain, with the avowed purpose of checking the spread of these maladies. No duty is more noble, and none has been more distinctly claimed by medical men, than the prevention of disease. In no direction is the exercise of this duty more loudly called for than in the case of syphilis, one of the most widespread and odious of maladies. A disease not confining itself to its immediate victim, but propagating itself, by different channels, in innocent wives, mothers, and children. The time is happily fast passing away, if it have not already disappeared, when misplaced sentimentality, or mistaken views of morality, can any longer prevent the application of the well known rules of sanatory science to this, as to other contagious disorders. The work of Dr.

Hammond consists of twenty lectures, prepared for his class at the Baltimore Infirmary. They are, of course, rather discursive in style, and do not pretend to be a complete treatise on the subject. The palm in that respect is frankly yielded to Dr. Bumstead's excellent book. The author claims to embody, in a small compass, the main practical points and doctrines on venereal disease, and to publish some results, based upon his own experiments, of a novel and important character.

The views held by the author regarding syphilis are, that the two species of chancre, commonly styled soft or non-infecting, and hard, infecting, or Hunterian, form two distinct maladies, inheriting a common name, in consequence merely of a common origin. He believes them to be radically different in their local aspect, the course they run, and their subsequent effects upon the constitution. In short, he is a Dualist pure and simple. He believes the soft sore requires only local treatment, and recommends Ricord's carbo-sulphuric acid paste as the best caustic; while he believes that the hard chancre, when it has time to develop itself, inevitably requires the administration of mercury for the cure of the symptoms it entails. He believes further that the excision or complete cauterization of an infecting chancre within the first six days of its appearance will prevent further infection. With respect to mercury he mentions that in the earlier portion of his career he was an anti-mercurialist, being deeply imbued with the doctrines and teaching of Guthrie, but that he found this plan did not answer his expectations, and he now frequently gives a course of mercury during a period of four or five months, or even longer. The author, however, readily concedes that in many cases of syphilis no specific treatment is necessary. Having laid down as an axiom that every disease which is curable by medicine is curable without it, the writer goes on to say:—

"I believe mercury, properly administered, is as antagonistic to the syphilitic poison as cinchona is to intermittent fever. I do not intend to be understood as saying that syphilis cannot be cured without mercury, any more than I would say that intermittent fever cannot be cured without cinchona or some of its preparations. On the contrary, I hold directly the opposite view, and I believe that mercury, as it is often used in the treatment of or as a prophylactic to syphilis, does much more harm than good. But I am, nevertheless, equally sure that when properly employed, with due care to avoid their injurious effects, we have—besides destroying the chancre—in the preparations of mercury the only prophylactics against constitutional syphilis, and the best agents we can use in its cure."

Whether mercury, however early administered, can ensure the non-appearance of secondary symptoms in a case of true infecting chancre, is open to much doubt. But there can be little hesitation on the score of the differing intensity of attacks of syphilis in different individuals. Some, it may be, suffer from a mild rash on the skin, accompanied with slight sore throat, and preceded by trifling rheumatic pains, and then they have no further trouble, whether they have been submitted to treatment or not, while others suffer in the most intense degree, from the severest symptoms, and are only relieved by persistent, and long-continued active treatment.

The author's views, on the nature and treatment of chancre, although open to criticism in some minor particulars, are those entertained by a very large and increasing number of surgeons. Indeed, to the writer of the present remarks the difficulties in the way of the unicist theory seem so great, while the points in favour of the dualist view are so numerous, that the latter appears to him to be the best, if not the only, hypothesis to reconcile the many conflicting testimonies to which the discussion of this subject has invariably given rise.

Of course, as to syphilization the author does not believe either in its desirability as a means of cure, or in its feasibility as a preventative measure. It is in reference to gonorrhea that the opinions held by Dr. Hammond differ materially from those of almost all his brethren. Up to the time of Hunter no definite distinction was made between gonorrhea and chancre, nor between chancres themselves. Gonorrhea was considered capable of producing constitutional syphilis. The experiments of Ricord appeared to have finally decided the question that gonorrhea was incapable of producing syphilis, and that they were totally distinct disorders, and his conclusions are almost universally endorsed. Dr. Hammond, however, believes and cites cases, too long to quote, in justification of this belief, that gonorrhea may be induced, first, by the virus of hard chancre, and secondly, by the virus of soft chancre, when the chancrous matter has been deposited for a certain length of time upon the mucous surface, without any abrasion being present, or without any chancre following. Vaginitis and urethritis may, he says, be induced by other causes, but true gonorrhea owes its origin to the contagion of chancrous pus alone. He further adds that the gonorrhea induced by the matter of a hard chancre will be followed by, and may impart constitutional syphilis, just as if a chancre had been present. Dr. Hammond gives many and most interesting cases in

support of his views. Those who dissent from them will say there had been an unobserved indurated chancre, and that it was from this, and not from the gonorrhea, that the constitutional lesions were derived. Dr. Hammond asserts that the most careful and repeated observations utterly failed to detect a breach of surface anywhere, and that, in point of fact, he feels certain there was none. No more interesting or remarkable history could be found than that related on page 232, and the pages following. It is too long to quote in detail, and to epitomize it would be to rob it of much of the internal evidence of its truthfulness. The conclusions arrived at by Dr. Hammond are:—

"1st. That the virus of an infecting chancre, when deposited on a secreting mucous surface upon which there is no solution of continuity, may give rise to gonorrhea unattended by chancre, but which is syphilitic in its character, and capable of producing constitutional disease.

"2nd. That the matter of such a gonorrhea is capable of causing an infecting chancre, either by natural or artificial inoculation, which chancre is followed by constitutional syphilis."

Similar propositions are made about soft sores.

Whether we admit Dr. Hammond's views with reference to gonorrhea and syphilis, we are not debarred from otherwise admiring the pleasant readable lectures in the book we have just closed. The author is a man whose experience has been unusually large both in military and civil practice, who has an observant, philosophical, and candid mind, and who is neither afraid to form, nor to express an independent opinion.

Injuries and Diseases of the Jaws—The Jacksonian Prize Essay of the Royal College of Surgeons of England, 1867. By CHRISTOPHER HEATH, F.R.C.S., Assistant Surgeon to University College Hospital, &c.

THIS is something more than a mere prize essay, excellent as many of them are now-a-days, and more especially those of the Jacksonian Prize series. It is the work of a practical surgeon of no mean repute already, and giving promise of, we hope, a long career of useful and profitable industry. Mr. Heath is well known to the readers of this Journal by his contributions to its pages, and by our notices of his works on anatomy and on minor surgery and

bandaging. The present work bears intrinsic marks of diligent investigation, and of a fair acquaintance with the literature of the subject, both recent and more remote. Mr. Heath is specially familiar with the records of Irish Surgery in this department. We find remarkable cases from the practice of Crampton, Cusack, Adams, Butcher, Collis, Fleming, Hutton, and R. W. Smith, quoted and intelligently remarked upon; while the museums, both metropolitan and provincial, have been carefully searched, and records of transatlantic cases have not been forgotten.

The illustrations are numerous and good; some of them are familiar as occurring in Mr. Fergusson's writings, to whom Mr. Heath was for some time house surgeon, but the majority are original. We would especially point to the series which illustrate the varying forms of the antral cavity, as important by drawing attentions to variations of structure which influence the forms of disease. Thus we have the natural outline of the cavity, a "triangular pyramid," with the base to the nose and the apex to the malar bone. We have it varying in capacity holding in one case $2\frac{1}{2}$ drachms of fluid, in another an ounce. We have it unsymmetrical, subdivided more or less completely into two or more cavities, with one or more apertures, natural, or the result of disease and so on. Each of these and of other variations is duly illustrated, and explained.

As something has lately been made of sub-periosteal resection, we give the following extract, which seems to show that under a new name we had been dealing with an old friend. Of this practice of surgical re-discovery we expect to have always some complaint to make; all we can say is, it is better to re-discover than to forget what is good.

"Under the name of 'Sub-periosteal Resection,' operations have been described by foreign surgeons, which in no respect differ from the extraction of sequestra as ordinarily practised, of which the following case, extracted from the *Lancet*, of 1863, is a good example:—'M. Rizzoli, of Bologna, submitted to the Surgical Society of Paris a case of necrosis of the lower jaw, from the fumes of phosphorus, in a man aged fifty-six years, in which the sequestra were removed through the mouth. M. Rizzoli made incisions on either side of the gums, scraped the thickened periosteum with a spatula from the dead bone, and removed the latter piecemeal. The preserved periosteum generated new bone in the place of the portions taken away, which comprised the body and part of the ramus on each side. It was, however, soon found that the upper part of the ramus and

the condyle were also diseased; these portions of bone were also removed through the mouth with the same precautions, and the periosteum again acted in the same way. Eventually the man was able to use his jaw, and masticate, though deprived of teeth. M. Forget, who reported on the case, observed very justly that there was nothing new in this action of the periosteum in necrosis of bone, surgeons having long acted upon this periosteal property in such cases. M. Flourens had pointedly said, 'Take away the bone, preserve the periosteum, and the preserved periosteum will restore the bone; but this applies less to cases of necrosis of bone than to cases of experiments on animals and operations performed on healthy bone and periosteum. And even in these cases it should be remembered that osseus substance is reproduced, but not the actual bone as it existed before the resection.' In some cases, however, incisions have been made at a comparatively early stage, before the shell of new bone has been formed, and the sequestrum immediately extracted, with good results. It may be doubted, however, whether there is any real gain in such procedures, either in time or result, since the repair is no more rapid that if the sequestrum were left, and there is the additional risk both of the actual operation, and of the deformity which may result from the premature withdrawal of the sequestrum. A case from the practice of M. Maisonneuve, illustrating the practice in the lower jaw, will be found in *Comptes Rendus*, April, 1861. In his recently-published work, 'La Régénération des Os,' M. Ollier, of Lyons, gives two cases of sub-periosteal resection, one of the upper and one of the lower jaw, for necrosis, in neither of which was there any osseous development, and which cannot, therefore, be regarded as very satisfactory examples of a proceeding whose great aim is the development of new bone."

Some practical remarks on the difference between bony cysts and cysts in bone are worthy of quotation. The first two sentences are from Mr. Adam's description of Mr. Cusack's well known case.

"The portion of bone removed comprises the entire right half of the lower jaw. The horizontal ramus is expanded into an oblong hollow shell with bony walls, and its interior is subdivided into many cells of various sizes, which are all lined by a fine polished membrane, and communicate freely with each other.

"Cases of this kind are to be distinguished from examples of cystic osteo-sarcoma, which will be subsequently described. Although the contents of the cysts may vary considerably, and may occasionally be so dense as to be almost solid, they are still *contents* only, and the cysts surround them, whereas in the case of cystic sarcoma a growth springs from the jaw, in which cysts of various sizes may be developed. The distinction is important, both on account of prognosis and treatment. In the cases of

cysts, whether uni- or multi-locular, the disease is of slow growth, and there is no tendency to fungous excrescences, so that the patient suffers little inconvenience. In the fibro-cystic growths, on the contrary, the progress is comparatively rapid, and the patient is soon worn out with pain and discomfort. The treatment of the two affections also is entirely different."

In the following page we find the following critical appreciation of two different operations:—

"Mr. Butcher, of Dublin, has for some years treated cases of cyst of the lower jaw through the mouth, by dividing the mucous membrane over the cyst freely, and then with gouge and bone-forceps removing the expanded external plate of the bone, with the contents and lining membrane of the cyst. In this operation, the teeth are interfered with as little as possible, and appear to remain firm. Granulations rapidly spring up from the denuded bone, and fill the wound made in the mouth; the cheek resumes its ordinary appearance, and no deformity or scar is left. In his work on 'Operative and Conservative Surgery,' Mr. Butcher narrates three cases treated in this manner, and remarks, that 'the proceeding according to this plan is troublesome and difficult, but its value to the patient in having no deformity left is priceless.' A valuable caution is here given respecting the facial artery, which might, without care, be divided from within the mouth in a position where it would be difficult to secure it. Mr. Butcher also narrates and gives a drawing of a case in which, finding the disease too extensive to be treated from the mouth, he adopted Dupuytren's external incision, and then levelled the projection to the line of the healthy bone with the best results, the incision being completely hidden behind the bone.

"Dr. Mason Warren has recently (*Boston Medical and Surgical Journal*, 1866) written upon the treatment of cysts of the jaws, and strongly recommends a milder and even more conservative practice than that followed by Mr. Butcher, which he thus summarizes:—'The treatment consisted in the puncture of the sac within the mouth, evacuating its contents, and at the same time obliterating its cavity by crushing in its walls; and lastly, in keeping up, by injections, &c., a sufficient degree of irritation to favour the deposition of new bone.

"One of Dr. Warren's illustrative cases will be found in the Appendix (Case XVII.), which contrasts favourably with the more severe operation of Mr. Butcher, and still more with cases treated by excision of the portion of the jaw containing the cyst."

We shall only draw attention to another portion of this essay, where Esmarch's operation for forming a false joint in cases of closure of the jaws by cicatricial tissue is compared with

Dieffenbach's—a subject on which several papers, by Mr. Heath, have appeared in this Journal. The passage is too long for insertion, and those who wish to read it must have recourse to the volume itself. We can promise them that they will find the book full of material and easyof digestion. It is capitally written in good English, without verbiage, andit is got up in Mr Churchill's usually good style. No operating surgeon should be without it.

Outlines of Physiology, Human and Comparative. By JOHN MARSHALL, F.R.S.; Professor of Surgery in University College, London; Surgeon to the University College Hospital. Two volumes. London: Longmans, Green, and Co. 1867.

IN the preface of the work which forms the subject of this notice the author states that the plan was designed with a special view to its utility as an educational book. It is not, therefore, a treatise merely embodying original investigations in a particular branch of science. Its perusal amply justifies the author's expectations that the concise but comprehensive summary of modern physiological science, both human and comparative, here presented, will prove as useful and interesting to the student of medicine and surgery, as it must form a convenient guide and an ample store of information to the lovers of nature generally in the prosecution of their physiological studies. With such aims in view physiology is treated of in connexion with those sciences—anatomy, chemistry, and physics—on which to so large an extent it must depend. It is impossible fitly to appreciate those treasures, which Nature strews with such profusion in our path, without a good working knowledge of chemistry and natural philosophy; such knowledge is absolutely needful to prosecute our inquiries successfully—just as needful as is the general mental culture which ought to preside over, and precede, all professional study. In the fulfilment of a task which must have involved immense labour and patient research, the author has taken care to avail himself of the most recent inquiries of the authorities on every subject with which he deals.

Two goodly volumes, with upwards of 600 pages in each, are occupied, firstly, as forming the groundwork of biological science, with a brief but sufficient description of the structures of the human body, their different characters and uses. The concluding portions of the first volume treat of general physiology, including

the functions of the living organism, and the vital properties of the tissues; the relations of man with external nature, a comparison of the animal and vegetable kingdoms, and of both with inorganic nature. The volume concludes with an elaborate examination of the functions of animal life. The functions of vegetative life occupy the larger portion of the second volume. Animal statics and dynamics, comprising the various forms of force exerted by the living body, with the relations of these forces to the quantity of food and air consumed, are considered in a separate section. The subject is one of the utmost importance, and is most ably treated by the author, who avails himself of the investigations of Professors Haughton, Playfair, Frankland, and Parkes, and indeed of all recent inquirers, to supplement his own. The different forms of reproduction in the animal kingdom, with the development of the vertebrate embryo are very fully discussed, and a short account of the growth, decay, and death of the body terminates the second volume. The plan of the work is both simple and convenient, and the whole is wound up by a most excellent index.

An admirable feature in the work is the excellence of the illustrations, more especially those derived from the structure and functions of the inferior animals, as bearing on those of man. This is of the more importance when the book is considered with reference to general education. It is difficult to assign a limit to the knowledge of both structure and function, which may in this way be achieved. It is important both as regards the study of the human frame, and it is important in regard to the inferior races, themselves so eminently deserving of separate, as well as comparative study and consideration.

The great range, not to dwell on their vast importance, of the subjects discussed in this work would render it impossible, within any reasonable compass, to comment severally upon the author's views. Still, it may not be inexpedient to advert to one or two points before closing the volumes, and commending them to the favour their merits are so well calculated to secure. Under the head of Chemical Composition of the Tissues, bone is stated to contain 10, muscular tissue about 74, blood 80, and grey nervous matter as much as 85 per cent. of water. The animal frame, however, when carefully dried, or casually mummified, has been found to lose so largely in weight that Moleschott's estimate, that in the entire human body water forms about 68 parts out of every 100, will probably be ascertained to be an inadequate proportion to cite as the actual fluid contents of the tissues. The circumstance is not of so much importance in

itself, as illustrating one of nature's provisions for economizing the supply of solid ingredients. Tissue, or essential water, as the author terms it, is perhaps the most important constituent of the human body. Without an ample supply, the unceasing vital and chemical actions which go on must come to an end. And, as Mr. Marshall insists, there is much reason to suppose that the action of water in the body is not that of a mere solvent, but that it enters into true chemical combinations during the varying vital processes of integration and disintegration. We know of nothing whose protracted loss entails such painful suffering as the want of water, a fact which, of itself, would fairly justify the inference as to its immense importance in the animal economy. The author's remarks on respiration are full and interesting, as well as suggestive of many reflections. His expression of parenchymatous respiration is a very happy one.

Marshall's *Outlines of Physiology* throughout, brings the reader to the level of the most recent investigations. It is a work of vast labour, evinces in many respects the utmost ability and painstaking research, and will doubtless long remain a worthy monument of the writer's fame.

Short Notes on Nice. By JAMES STANNUS HUGHES, M.D., F.R.C.S.I.; Prof. of Surgery in the Royal College of Surgeons, Ireland; Surgeon to Jervis-street Hospital, &c. Dublin: Cooper. Fcp, 8vo, pp. 37.

IN the winter of 1867 Dr. Hughes visited Nice, and was so much pleased with it as a winter residence for patients suffering from certain forms of disease, and, at the same time, so struck with its unsuitability for many who are often sent there, that he determined to collect all the information he could as to its climate and its peculiarities as a Health Resort, and lay it before his professional brethren in a concise and convenient form. The *brochure* before us owes its origin to this determination. The climate of Nice is of a stimulating character; and Dr. Hughes shows that while it is very beneficial in certain forms of phthisis, in chronic bronchitis, atonic dyspepsia, albuminuria, and many allied forms of disease, it is injurious in advanced cases of phthisis, especially where there is a quick pulse, with irritative fever, in irritative dyspepsia, and many similar cases. It appears, moreover, that the different dis-

tricts of the town present peculiar features, making them suitable for different forms of disease, so that patients going there should be warned as so the residences they select. On this subject Dr. Hughes gives much valuable information, and also on the means of getting to Nice, the route to be taken, and the expense of the journey, as well as the cost of living when there. We think Dr. Hughes has conferred a great benefit on his professional brethren by laying before them, so clearly and minutely, and, at the same time, so briefly, the results of the observations he made during his visit to Nice.

Clinical Lectures on Diseases of the Liver, Jaundice, and Abdominal Dropsy. By CHARLES MURCHISON, M.D., F.R.S., &c. London: Longmans, Green, and Co. 1868. Post 8vo, pp. 556.

WE always see with pleasure any communication from Dr. Murchison; before he publishes he takes the trouble of making himself acquainted with what others have written on the subject, and he waits till he has collected, as the result of personal observation, ample materials not merely to justify but to give weight to an independent judgment. In the work before us he has not departed from his usual custom; it bears evidence of an accurate and extensive knowledge of the researches of others, and of laborious and careful investigation on his own part.

The first lecture is devoted to a description, illustrated by diagrams, of the normal situation and dimensions of the liver, and of the various conditions which are liable so to alter its position as to give an appearance of enlargement, such as congenital malformations, rickets, tight-lacing, and diseases of the thoracic and abdominal cavities. The second and third chapters treat of true enlargements of the liver, and of these he makes a division, very suitable for clinical purposes, into the painless and the painful enlargements. Dismissing very briefly that rare condition known as simple hypertrophy, in which there is increased size and number of the secreting cells without alteration in structure, he gives a clear and admirable account of the three other painless enlargements—those, namely, which arise from waxy deposit, from accumulation of oily matter, and from hydatid tumour. Of those in which pain is a prominent symptom he enumerates six:—congestion of the liver, inflammation of the bile-ducts, obstruction of the common

duct and retention of bile, pyemic abscesses, tropical abscess, cancer. Speaking of congestion he gives a warning of the necessity of which our own experience has several times convinced us. In diseases of the heart the moderate use of brandy and whiskey often gives relief which no other remedy affords, but the regulation of the quantity requires the greatest care; the liver, already loaded with blood owing to the obstacle to its onward flow presented by the cardiac mischief, is very liable to become painfully congested by the irritation of alcoholic drinks. Some time ago we were summoned during the night to see a sufferer from aortic and mitral disease, the immediate cause of whose misery was plainly congestion of the liver, brought on by the reckless use of stimulants without medical advice, a few grains of calomel laid on his tongue, and two leeches applied to the margin of the right ribs, gave an amount of relief which created in his mind an estimate of the curative resources of his adviser, which, unfortunately, the nature of his permanent malady did not justify. Though abscess of the liver is a rare disease in this country, it yet occurs with sufficient frequency, and when it does occur the determination of what is to be done with it is a matter of such anxiety to the physician that we quote Dr. Murchison's opinion on the subject, adding that circumstances having imposed on us the responsibility of treating six such cases, the result of waiting was in every one of them just what he says. In one the abscess burst into the peritoneal sac and caused death with extreme suffering; in one life was destroyed without rupture by prolonged diarrhea and pressure on the right lung; in one, an hospital patient, a woman who had never been out of Britain, fever, vomiting, and diarrhea brought about the fatal issue. In the fourth, the abscess emptied itself through the right lung, and although the gentleman had every advantage of change of air and nourishment he was gradually worn down. In the remaining two openings took place both into the right lung and externally, with a like result. He says:—

"After duly balancing, then, the dangers of operation against the dangers of expectancy, I do not hesitate to recommend to you the propriety of evacuating the pus in a large number of cases of tropical abscess of the liver. The operation may not be free from danger, but to wait in these cases upon Nature, as it is called, is to wait upon Death, and I would suggest for your guidance the following rules:—

"*a.* In all cases where there is a visible fluctuating tumour, operate at once.

"*b.* In cases where the symptoms of abscess of the liver are present, with a distinct tumour projecting from the normal contour of the liver or causing bulging of the ribs, even though there be no perceptible fluctuation, it will be well to operate.

"*c.* When symptoms of abscess coexist with uniform enlargement of the liver, but with no distinct tumour or bulging, if there be any local œdema, or obliteration of an intercostal space, or acute pain, always localized to one particular spot when the patient takes a full inspiration, it will be well to operate; but if there be no such œdema or obliteration or pain, it may be better to wait, as the enlargement may possibly be due to multiple abscesses, or if there be but one abscess, it is doubtful if it will be reached.

"When the operation is resolved on, it may be performed as follows:—

"*a.* When there is distinct pointing with an inflammatory blush of the skin, an opening may be made with a bistoury.

"*b.* Under other circumstances, a small trocar will be preferable, and it ought to be introduced wherever there is the slightest fulness or superficial œdema, or acute pain.

"*c.* When the abscess is small, not holding more than ten or twelve ounces, it ought to be completely evacuated, and the canula tied in for two or three days. On its removal, a tent of lint dipped in oil may be substituted.

"*d.* When the abscess is very large it will be better to evacuate it by instalments at short intervals, carefully excluding the air on each occasion.

"*e.* In the exceptional cases, where no adhesions exist, it will be prudent to produce them by the local application of caustic potash, before puncturing.

"*f.* After the operation, a large warm poultice should be applied over the liver, and the patient should lie on it, taking care that, if the canula has been left in, pressure upon it is obviated by a suitable pad or pillow. A full dose of morphia ought also to be administered at once."

The author next treats of cancer at length, and very briefly of the rare forms of hepatic enlargement due to tubercular deposit, disease of the lymphatic system and multilocular hydatid tumour, and then proceeds to contractions of the liver. He shows that there are five perfectly distinct pathological conditions under which a chronic atrophy of the organ is found, though, doubtless, they are all commonly set down as cirrhosis. We sometimes hear great surprise expressed at the discovery of a contracted liver in a person of temperate habits, the supposition being that increase in the amount of

fibrous tissue and destruction of the secreting structure (true cirrhosis) is the only way in which hepatic atrophy can result; this, Dr. Murchison believes, occurs, with hardly an exception, in those only who have drank ardent spirits freely and in an undiluted form. Obstructed circulation in pulmonary and cardiac disease, however, is liable to cause such distention of the capillaries of the hepatic vein that they obliterate by their pressure the secreting cells, and thus lead to diminution in the bulk of the organ. In those who have been temperate, too, there is sometimes seen an atrophic condition, in which there is no increase in the fibrous tissue though in other respects it presents an aspect closely resembling true cirrhosis. Frequent attacks of peri-hepatitis are likewise liable to leave the capsule thickened and dense bands of fibrous tissue stretching into the interior; this state, to which the syphilitic appear specially liable, ends in lessened size of the liver; and lastly, there is the "chronic atrophy" of Frerichs, or the "red atrophy" of Rokitansky, of which destruction of the ramifications of the portal vein is the important anatomical character, and which is most frequently seen in connexion with simple and cancerous ulceration of the stomach and bowels. During life it is difficult, and fortunately not very important, to distinguish between these several forms of atrophy, but Dr. Murchison gives us some hints which will in many cases guide us in doing so.

The eighth, ninth, and tenth chapters, occupying one hundred and fifty pages, are devoted to the important subject of jaundice. He points out the various causes which may give rise to a colour of the surface more or less resembling it and liable to be mistaken for it, and tells us how we may distinguish them from it. He describes the phenomena and symptoms of true jaundice, and then discusses the theory of its production. All cases of jaundice, he tells us, may be referred to one of two classes:—

I. Cases in which there is a mechanical impediment to the flow of bile into the duodenum, and where the bile is in consequence retained in the biliary passages and thence absorbed into the blood.

II. Cases in which there is no impediment to the flow of bile from the liver.

The way in which jaundice arises in the first class is sufficiently clear. To explain the cases in the second the theory of non-secretion has usually been adopted. It is assumed that bile, or at all events, bile pigment, exists ready formed in the blood, and that if the liver fails to separate it, an accumulation of it in the circulating

fluid is the result. From this view Dr. Murchison altogether dissents, and he gives what appear to us valid reasons for doing so. He believes that the bile-pigment is formed in and by the secreting structure of the liver, and does not exist in the blood before it reaches that organ. The phenomenon of jaundice, where there is no obstruction to the escape of bile through the ducts, he then proceeds to account for as follows:—

"There are grounds for believing that not only in jaundice, but in health, a portion of the bile-pigment, as well as of the bile-acids formed in the liver, is absorbed into the blood.

"The quantity of bile-pigment discharged with the feces is but a fraction of what is calculated to be secreted by the liver. Speaking of the principal constituents of bile, Dr. Carpenter remarks: 'the further we descend in the intestinal canal, the less of them do we meet with:' and again he says: 'of the bile which is poured into the alimentary canal, a large part is certainly reabsorbed, its constituents being destined to undergo oxydation and be eliminated, for the most part by the respiratory processes; and it is probably from this reabsorbed portion of the bile that the sulphur of the urine is derived.' According to Dr. Bence Jones, also, 'the colouring matter (of the bile) undergoes changes in the intestines, and some of it most probably in health is carried into the blood and textures, and is finally removed in the colouring matter of the urine. It is the knowledge of this circumstance that offers the only satisfactory explanation of the remarkable discrepancy of opinion in the profession respecting mercury, podophyllin, and other substances which are supposed to exercise some specific effect upon the liver, in stimulating it to an increased secretion of bile. The practical physician gives a dose of calomel, finds the quantity of bile in the motions greatly increased, and argues that the liver has been stimulated to an increased secretion; but the physiologist ties the common bile-duct, makes a fistulous opening into the gall-bladder, and then finds that calomel has no effect on, or even diminishes, the amount of bile that drains away through the fistula. Mercury and allied purgatives probably produce bilious stools by irritating the upper part of the bowel, and sweeping on the bile before there is time for its absorption; irritating articles of diet will often produce precisely the same effect. Calomel is of unquestioned utility in congestion of liver, but if it acted, as is usually argued, by stimulating the liver to increased secretion, it might be expected to increase the congestion rather than diminish it. It is quite possible, however, that the irritation of the duodenum by purgatives may be reflected to the gall-bladder, and cause it to contract, and that the evacuation of this viscus may account in part for the increased quantity of bile in the stools.

"2. Although in the human subject, if there be no obstruction of the

common bile-duct, sufficient pigment remains to colour the feces, in carnivorous animals the feces contain scarcely any pigment, and in the boa, although the liver is large and secretes bile freely, the excrement contains no trace of pigment. The bile-pigment in these animals disappears for the most part or entirely in the bowel, and yet these animals are not jaundiced.

"3. From what is now known of the diffusibility of fluids through animal membranes, it is impossible to conceive bile long in contact with the lining membrane of the gall-bladder, bile-ducts, and intestine, without a portion of it (including the dissolved pigment) passing into the blood. A circulation is constantly taking place between the fluid contents of the bowel and the blood, the existence of which, till within the last few years, was quite unknown, and which even now is too little heeded. 'It is now known,' says Dr. Parkes, in his Gulstonian Lectures on Pyrexia, 'that in varying degrees, there is a constant transit of fluid from the blood into the alimentary canal, and as rapid reabsorption. The amount thus poured out and absorbed in twenty-four hours is almost incredible, and of itself constitutes a secondary or intermediate circulation never dreamt of by Harvey. The amount of gastric juice alone, passing into the stomach in a day, and then reabsorbed, amounted in the case lately examined by Grunewald, to nearly 23 imperial pints. If we put it at 12 pints we shall certainly be within the mark. The pancreas, according to Kroeger, furnishes $12\frac{1}{2}$ pints in twenty-four hours, while the salivary glands pour out at least 3 pints in the same time. The amount of the bile is probably over 2 pints. The amount given out by the intestinal mucous membrane cannot be guessed at, but must be enormous. Altogether the amount of fluid effused into the alimentary canal in twenty-four hours amounts to much more than the whole amount of blood in the body; in other words, every portion of the blood may, and possibly does, pass several times into the alimentary canal in twenty-four hours. The effect of this continual outpouring is supposed to be to aid metamorphosis; the same substance more or less changed seems to be thrown out and reabsorbed until it be adapted for the repair of tissue or become effete.

"It is in the course of this osmotic circulation that the constituents of bile are taken up into the blood, becoming themselves probably transformed in the process into products which are eliminated by the lungs and kidneys,[a] while at the same time they assist in the assimilation of the nutritive materials derived from the food. And here we have an explanation of those cases of jaundice where there is no impediment to the flow of bile from the liver. Under normal conditions, the bile that is

[a] In various diseased conditions of the liver, even when there is no jaundice, or bile-pigment in the urine, this fluid is rendered very dark, sometimes almost black, by boiling and adding nitric acid.

absorbed is at once transformed, so that neither bile-acids nor bile-pigment can be discovered in the blood, and there is no jaundice. But in certain morbid states the absorbed bile does not undergo the normal metamorphoses, but circulates with the blood and stains the skin and other tissues. The morbid states, which, so far as we know, conduce mainly to this result, are these:—

"1. Certain poisons, such as snake-poison and chloroform, the poisons of yellow fever, relapsing fever, pyemia, or in rarer cases, those of remittent fever, typhus, scarlatina, &c.

"2. Nervous influences, such as a sudden fright, great or protracted anxiety, &c.

"3. A deficient supply of oxygen, as in persons living in confined and crowded dwellings, may prevent the normal metamorphoses of bile taking place.

"4. An excessive secretion of bile, especially when conjoined with constipation. In this case, unless the bile be removed by the bowels, too much may be absorbed to undergo the normal metamorphoses, and the presence of the untransformed bile in the blood causes jaundice.

"The only difference, then, between jaundice from obstruction and jaundice independent of obstruction of the common bile-duct, is that in the former case none of the bile can escape from the body by the feces, and consequently all that is secreted, after the gall-bladder and biliary passages are fully distended, must be absorbed into the blood. As might be expected, the jaundice in this form is usually much more intense than in the other, although even here the intensity will vary according to the amount of bile secreted by the liver, and the activity of the metamorphoses going on in the blood. When the obstruction has lasted long, the jaundice often becomes much paler, not from removal of the obstruction, but from the secreting tissue of the liver being destroyed and comparatively little bile being secreted.

"Lastly, we may inquire what explanation the theory of jaundice now advanced gives of the cerebral symptoms met with in certain cases and already referred to (p. 296). From what has been stated it is very probable that the entrance of bile into the blood is necessary to perfect those metamorphoses from which materials for the urinary solids are derived. At all events, this seems certain that when the secreting tissue of the liver is destroyed, as in acute atrophy and in certain cases of long-standing obstruction of the bile-duct, these metamorphoses are imperfectly executed. Urea is not formed in sufficient quantity, and substances such as leucine and tyrosine, of intermediate composition between it and the proteine compounds (see p. 230), accumulate in the blood and appear in the urine. These are the circumstances under which cerebral symptoms occur in cases of so-called 'suppression of bile.' The mere presence of bile in the blood, as I have already shown you (p. 297), will not

account for them, and indeed in those cases where cerebral symptoms are most apt to supervene, the jaundice as a rule is less intense than it often is when they are absent."

Discrediting, therefore, the existence of either bile-pigment or bile acids in the blood before it reaches the liver, believing, in fact, that bile must have been formed by the liver in every case before it can be present in the blood, Dr. Murchison is not disposed to attach any importance to the modification of Pettenkofer's test, on which stress was laid by Dr. Harley in his *Essay on Jaundice*, as serving to distinguish cases of retention from cases of suppression of bile. He enumerates and discusses in detail, but concisely, the numerous causes of jaundice, and then carefully sums up the elements of diagnosis:—

"1. The chief indication of obstruction of the common bile-duct is furnished by the stools. When there is no obstruction of the duct, the stools almost invariably contain a certain quantity of bile; but when the duct is obstructed, no bile enters the bowel, and the stools are clay-coloured. Two sources of fallacy must be remembered. First, the jaundice usually persists for a short time after the removal of the obstruction, and thus, as happens not unfrequently in the case of gall-stones, bilious motions may coexist with jaundice which has resulted from obstructed bile-ducts. Secondly, if the motions be thin or watery, they may appear to contain bile from the admixture of jaundiced urine.

"2. A tumour corresponding to the region of the gall-bladder will favour the view that the jaundice is due to obstruction of the bile-duc (p. 142).

"3. Jaundice which persists, and is yet slight, is most probably independent of obstruction of the bile-duct. Persistent jaundice from obstruction speedily becomes intense; but in reference to this you must remember what I have so often insisted upon, that even when there is irremovable obstruction of the bile-duct, the intensity of the jaundice will vary from time to time according to the amount of bile secreted by the liver, and that in the advanced stage the jaundice may permanently fade in consequence of the destruction of the glandular tissue and the small quantity of bile which is secreted.

"4. Jaundice appearing suddenly in a person whose previous health has been good is most probably the result of obstruction of the duct by a foreign body, or it has a nervous origin. In the former case it will be preceded or accompanied by biliary colic and vomiting, and the stools will be clay-coloured: in the latter there will be a history of concussion or of some severe mental emotion, the motions will contain bile, and the jaundice will be often accompanied by delirium and other cerebral symptoms.

"5. Jaundice coming on very slowly, but ultimately becoming intense, with complete disappearance of bile from the motions, is most probably the result of pressure on the bile-duct from without, or of the growth of some tumour in the interior of the duct (pp. 337-9).

"6. Several attacks of temporary jaundice with distinct intermissions point to gall-stones if the patient be of adult or advanced life (p. 322); early life, to catarrh of the duodenum or bile-ducts (p. 133).

"7. Pain is present in some cases of jaundice, absent in others. There may be little or no pain in cases where the cause is a duodenal ulcer, a simple stricture of the duct, enlarged glands in the fissure of the liver, or the poison of some specific fever. It is well also to remember that in very rare cases a gall-stone has been known to obstruct the common duct and cause permanent jaundice, without ever having excited attacks of biliary colic. A pain coming on in severe paroxysms, and then subsiding, may result from: *a*, gall-stones (see p. 319); *b*, hydatids (p. 325); *c*, a duodenal ulcer (p. 334); and, *d*, an aneurism of the hepatic artery (p. 345). Pain, more or less constant, with tenderness on pressure below the right ribs, will indicate that the jaundice depends on: *a*, congestion of the liver (p. 121); *b*, catarrh of the bile-ducts (p. 132); *c*, pyemia with purulent deposits in the liver (p. 148); *d*, cancer of the liver (p. 190); *e*, acute atrophy of the liver (p. 227).

"8. Jaundice concurring with great enlargement of the liver is most probably due to cancer of the liver (p. 190); but it may also arise from waxy liver, when the bile duct is compressed by enlarged glands in the portal fissure (p. 26), or from multiple abscesses of the liver (pp. 147, 460).

"9. The diagnosis of the cause of jaundice is often materially assisted by the coexistence with it of ascites. When permanent jaundice, with complete absence of bile from the motions, and ascites without dropsy elsewhere are present in the same case, you will rarely be wrong in inferring that the obstruction of the gall-duct, which causes the jaundice, and the obstruction of the portal vein, from which the ascites results, are due to a common cause. That cause cannot be a gall-stone. This will obstruct the bile-duct, but cannot obstruct the flow of blood in the portal vein, so as to produce ascites. The double obstruction is most likely to be caused by pressure from without upon the gall-duct and portal vein, where they lie side by side in the fissure of the liver, by enlarged lymphatic glands, by a tumour in the head of the pancreas, or by cancerous nodules projecting from the surface of the liver itself. It is quite possible, however, for these lesions to cause jaundice, without ascites. In the advanced stage of cirrhosis it is also not uncommon for jaundice to coexist with ascites; but then the liver is small, the jaundice is slight—little more than sallowness, and, what is more important, the colour of the motions proves that bile-pigment is still secreted, and finds its way into

the bowel. There is not a complete absence of bile-pigment from the excrement.

"10. In a large proportion of cases of jaundice the pulse is unusually slow and the temperature is not increased. When jaundice is accompanied by febrile symptoms, the probable causes are: *a*, inflammation of the bile-ducts (p. 132); *b*, some specific fever (p. 378); or, *c*, pyemia (pp. 148, 390).

"11. Delirium, stupor, and other cerebral symptoms concurring with jaundice suggest: *a*, acute atrophy of the liver (pp. 228, 395); *b*, poisoning by phosphorus (p. 393); *c*, some specific fever or other blood-poison (p. 378); *d*, nervous shock (p. 398); or *e*, pneumonia (p. 401). In all these cases the symptoms are those of an acute illness, the stools contain bile, and the urine often contains leucine and tyrosine and is deficient in urea. Similar symptoms, however, may also supervene in cases of protracted jaundice from obstruction of the bile-duct, in which the stools contain no bile (p. 296).

"12. In diagnosing the cause of jaundice it is always important to keep in view the condition of the patient prior to its appearance. In the case of jaundice from gall-stones or nervous shock the patient may have been in excellent health previously. In catarrhal jaundice the attack is preceded for a week or ten days by febrile symptoms with vomiting and diarrhea (p. 132). Great emaciation with vomiting after food prior to the jaundice ought to suggest cancer of the pancreas, duodenum, or pylorus (pp. 337, 342), and pain two or three hours after a meal with hematemesis will point to a duodenal ulcer (p. 333). Jaundice occurring in the course of specific fevers or pyemia will be preceded by the symptoms characteristic of these disorders. Jaundice in the early stage of pregnancy may be due to congestion of the liver from suppression of the catamenia (p. 125); in the more advanced stages it may arise from pressure of the enlarged uterus upon the bile-duct (p. 348), or from acute atrophy (p. 232). Lastly, true jaundice in the new-born child may result from the inhalation of a vitiated atmosphere (p. 401), from plugging of the bile-duct by inspissated bile or gall-stones (p. 323), or from congenital closure or deficiency of the duct (p. 329)."

The eleventh chapter is devoted to a consideration of the means of detecting fluid in the peritoneum, the various conditions which simulate it, and the different causes on which it may depend; and the twelfth to a separate discussion of the three subjects of hepatic pain, gall stones, and enlargements of the gall bladder. The whole work admirably sustains Dr. Murchison's reputation as a teacher of exact diagnosis, an earnest searcher after a true pathology, and a practical physician. The chapters on treatment contain most

valuable directions as to the management of such cases of hepatic disease as are curable, and suggestions for relieving the distressing symptoms in the many which unfortunately are not.

CARMICHAEL PRIZE ESSAYS.

1. *First Carmichael Prize Essay:—The Medical Profession and its Educational Licensing Bodies.* By E. D. Mapother, M.D., Professor of Anatomy Royal College of Surgeons, &c. Dublin: Fannin and Co. 1868. Fcp. 8vo, pp. 227.

2. *Medical Education and Medical Interests*, being the Essay to which was awarded the Carmichael Prize of £100 by the Council of the Royal College of Surgeons in Ireland, 1868. By Isaac Ashe, A.B., M.B., C.M., T.C.D. Dublin: Fannin and Co. 1868. Fcp. 8vo, pp. 164.

In his will, dated the 11th February, 1849, the late Richard Carmichael bequeathed £3,000 to the College of Surgeons in Ireland, for the institution of two prizes of £200 and £100 each, to be adjudged every fourth year by the Council of the College, for the best and second best essays on the following subjects:—

1st. "The state of the Medical Profession in its different departments of Physic, Surgery, and Pharmacy in Great Britain and Ireland at the time of the writing of these essays."

2nd. "The state of the Hospitals and Schools of Medicine, Surgery, and Pharmacy."

3rd. "The state and mode of examination of testing the qualifications of candidates of the different licensing Colleges or Corporations in Medicine, Surgery, and Pharmacy."

Mr. Carmichael directed further that under these heads the authors should make suggestions as to the improvement of the profession, so as to render it more useful to the public and a more respectable body. That they should consider the preliminary and moral education of students and the best mode of conducting their medical studies, and also the best mode of rendering the examinations as demonstrative as possible.

Mr. Carmichael desired that in case the Council of the College did not carry out the bequest the interest of the money should be handed over to the Medical Benevolent Fund; and, whether owing to a desire to have the money thus applied or to the difficulty of

obtaining essays of sufficient merit, the prizes have never been awarded till now, very nearly twenty years after the death of the founder. It is not, however, our province to inquire into this, but there seems to be good reason to believe that the Council thought the money would be more usefully applied to the purposes of the Medical Benevolent Fund than to the institution of prizes.

Of the essays to which the prizes have at length been awarded, that of Dr. Mapother obtained the first and Dr. Ashe's the second. We do not mean to question the correctness of the decision, nor to compare the merits of the essays. They are both well written and full of most interesting and valuable information, well digested and arranged; and though we may differ in many points from both authors, yet we can honestly congratulate them on their success, and the profession on the exposition afforded of its wants, and the suggestions made for its improvement.

Dr. Mapother has given more attention to the first and second clauses specified by Mr. Carmichael—that is, the state of the profession and of the hospitals and schools—than Dr. Ashe, who has mainly devoted himself to the educational aspects of the question. Dr. Mapother opens his essay by showing that medicine has for its field not merely the curing of the sick but the preservation of the health both of individuals and communities, and that it affords besides valuable aid in relation to many subjects of vital interest to the State. The members of the profession have, moreover, been distinguished in all ages for their scholarly and scientific pre-eminence, as well as for their unselfish and philanthropic exertions, and for a forgetfulness of personal danger which, while it may not equal the brilliancy of military heroism, surpasses it in usefulness. The importance of the profession is not, however, fully recognized, and Dr. Mapother refers to many examples showing the want of generosity of governments towards it, and he suggests as remedies the more thorough education of the public, so that they may know how to distinguish between ignorant pretenders and well-informed and honourable practitioners, who will offer neither flattery nor false hopes; the institution of just rewards, such as elevated positions in the State for its most distinguished promoters, which would stimulate the talented and refined to adopt it as their calling; and he urges its claims to parliamentary representation.

The history of the legislative enactments affecting the medical profession is rapidly sketched by Dr. Mapother from the first charter down to the Act of 1858, of which he gives an analysis

offering some suggestions for its amendment. He then describes the conditions necessary to ensure success in medical life. Medical ethics, and the conditions of the various services, both military and civil, are next considered, and it is shown that the condition of the so-called "State medicine" is at present very unsatisfactory as regards registration, sanitary and medico-legal arrangements, and the appointment of "medical supervisors," is suggested to whom the superintendence of registration should be transferred from the clerks of unions, and also the non-legal functions of coroners, the legal being committed to the stipendiary magistrates and police, and these functionaries abolished.

As to private practitioners, Dr. Mapother argues that there should be two grades—viz., the Physician and Surgeon who does not supply medicines to his patients, and the General Practitioner who does; and these latter, he urges, should only charge for their advice and attendance, and have nothing to do with the sale of drugs, which should be confined entirely to Pharmaciens, or the licensees of a College of Pharmacy, a title proposed to be conferred on the Apothecaries' Hall of Ireland and the Parmaceutical Society of England. Pharmaciens should, on the other hand, be forbidden to embark in medical practice. Dr. Ashe holds even more decided views as to the complete severance of pharmacy from medical practice, for he would have the General Practitioner decline, in all cases where it may be possible, to supply medicines to his patients, even gratuitously, and he states that this has now become the general rule in Liverpool. He argues that the combination of trade in drugs with the profession of medicine is not only incompatible with the due performance of the duties of both, but derogatory to the profession and injurious to the public.

We now come to the consideration of education. On this subject Dr. Ashe enters more into detail than Dr. Mapother. As to preliminary education, he proposes that it should begin at the age of twelve, and continue till eighteen, and be conducted in special schools under the management of physicians. He lays down a curriculum indicating the subjects to be studied in each of the six years. At the end of this time he would allow the strictly professional education to commence; but an examination in the subjects studied at school must first be passed, and Dr. Ashe would not allow any exemption from this examination, not even to graduates in arts, for many young men, he says, obtain degrees in arts without having gained any such amount of knowledge, or

given any such proof of education or cultivation of mind as should imply the possession of even very humble abilities—abilities which would fall far short of the standard required for the due discharge of the duties of our profession.

Dr. Mapother is far from being so definite in his directions as to the preliminary education; but he too wishes for a special school for lads intended for the medical profession, and his views are in the main of the same character as those of Dr. Ashe. They both seem to us to have committed a not uncommon error in aiming too much at the acquisition of useful knowledge rather than at the education of the mind. Dr. Mapother thinks "unless students commence an arts course early it is not advisable they should spend four years at it, for these," he says, "are the very years when the mind is most capable of learning the practical duties and the kind of knowledge which make the good physician." Dr. Ashe also objects to University courses, "because the time and means necessary for the course of instruction are more than can be afforded by young men designed for the pursuit of medicine." Both authors, indeed, acknowledge the advantages that would arise from a University education, and the importance of the social *status* derived therefrom, but both seem to us to misapprehend the true object of preliminary education and the value of University training. This subject was very happily touched on by Professor Acland in his address to the British Medical Association at the late Oxford meeting; and the following quotation, which he made from Mr. Mill, clearly shows the true functions of a University:—"The proper function of a University in national education," says Mr. Mill, "is tolerably well understood. At least there is a tolerably general agreement about what a University is not. It is not a place of professional education. Universities are not intended to teach the knowledge required to fit men for some special mode of gaining their livelihood. Their object is not to make skilful lawyers or physicians, or engineers, but capable and cultivated human beings. . . . What professional men should carry away with them from a University is not professional knowledge, but that which would direct the use of their professional knowledge, and bring the light of general culture to illuminate the technicalities of a special pursuit."

The narrowing tendency of exclusive devotion to one class of pursuits in a limited society, deprecated by Dr. Acland in his address, may be adduced as an insuperable objection to all special

systems of preliminary education, and we rejoice to know that in Ireland, at least, the number of students who seek the advantages of a University training before commencing their professional education is every year increasing. Already, indeed, a larger proportion of the medical men of Ireland possess degrees in arts than in any other part of the kingdom. We at one time made a careful analysis of Churchill's Medical Directory in reference to this subject, where we found that of the medical men practising in England 4·10 per cent. made returns showing they had degrees in arts, or degrees in medicine, which implied degrees in arts. In Scotland the proportion was 3·4 per cent., while in Ireland it was as high as 17·12 per cent.

We come now to consider professional education. On this Dr. Mapother makes but few suggestions. He describes the present arrangements of the schools, and seems to think them sufficient if well and thoroughly carried out. He would allow the student to commence his professional education at any age. Sixteen or seventeen he considers the normal age. He would provide collegiate residences for the students, and have them wear academic costumes. He considers four years a sufficient time for the professional education, and thinks any lengthening of it would be inadvisable. Hospital attendance should, he thinks, be continued throughout the whole course, as well as the study of practical anatomy; and in addition to attendance on the various lectures he would advocate an efficient system of tutorial instruction (grinding) throughout the whole period of the student's pupilage.

As with preliminary education so with the professional, Dr. Ashe is more definite and precise than Dr. Mapother. In many respects, indeed, he is arbitrary to a fault in his rules. His remarks arrange themselves under two heads—practical instruction and systematic; and he recommends plans for the more full development of both. Under the first head he dwells especially on the value of case-taking and dresserships, and urges the formation of classes for clinical tutorial instruction by the resident medical officers of hospitals. In reference to "systematic instruction," or that given in the school lecture-room in contradistinction to that given in the hospital, the dissecting-room, or the chemical laboratory, Dr. Ashe recommends free trade in teaching. He would "subject the lectures to those conditions of competition and rivalry which, and which alone, are proved by theory and shown by experience to be capable of stimulating and guiding exertion, and ensuring excellence in all

other walks of life, and this can only be done by making attendance on the class, payment of the fee, and production of the certificate optional on the part of the student." This is a system we have repeatedly advocated in the pages of this Journal, but we have always recommended that sessional examinations should be combined with it. We would let students obtain their education where, when, and how they please, but make the colleges test their progress by examinations on stated subjects three or four times in each year of their pupilage. Thus the colleges would be enabled to enforce a systematic course of training, and the benches of incompetent or indolent teachers would be emptied, while teachers having information to give and capable of giving it would find their reward. Dr. Ashe omits the sessional examinations from his programme, and we do not see how his system of free trade teaching could work without them; but combined with the sessional examinations it would, we believe, be the true remedy for the present deficiencies in our schools and systems of education; above all, it would put an end to all systems of cramming, and place on their true basis the systems of professorial and tutorial teaching. We have dwelt at such length upon what we consider the most important parts of those essays that we cannot refer to the remaining points discussed in them. We earnestly commend the careful study of the essays themselves to our legislators, and to those entrusted with the guidance of our colleges and the regulation of medical education, as well as to all who either are or are about to become students of medicine.

PART III.

MEDICAL MISCELLANY.

Reports, Retrospects, and Scientific Intelligence.

PROCEEDINGS OF THE PATHOLOGICAL SOCIETY OF DUBLIN.[a]

Dr. Gordon, President.

Purulent Inflammation of the Aorta.—Dr. Gordon said:—The preparation which I now lay before the Society presents some features of morbid anatomy worthy of record. The subject of the case had been attending the Whitworth Hospital as an intern patient, back and forward, for the last three years. The symptoms under which he laboured were very constant. He had always been admitted with bronchitis and emphysema of the lungs; and the condition of the heart was considered to be a very wide tricuspid opening allowing of regurgitation freely back from the right ventricle, and also a permanently patent condition of the left auriculo-ventricular opening. This opening was considered to be also rather widened than narrowed, on account of the fulness and freedom from intermission in the pulse, and other signs and symptoms. The attacks under which the man laboured almost always yielded to treatment; local depletion, by means of a few leeches or cupping, together with the administration of digitalis, relieved him to a certain extent, but the bronchitis never completely disappeared; the emphysematous condition of the lungs, of course, remained, but the dyspnea was usually rapidly relieved, and he was able to return to his work, which was principally driving a dairy cart. No matter what amount of recovery he made there was one symptom that always remained constant—a more or less permanently blue condition of the face and upper part of the body. This condition made us add to our diagnosis that most probably there was a communication between the two sides of the heart. The last time of his admission to hospital was from a fortnight to three weeks ago.

[a] These reports are furnished by the Secretary to the Society.

He came in after a very cold day, and his breathing was now more embarrassed than upon any former occasion, and the surface of his body was colder. It was more difficult to get him out of the state of collapse in which he was than it had ever been before. He made, however, a pretty fair recovery. The amount of dyspnea from which he suffered was relieved, and he was able to get up in the latter part of the day, and the quantity of expectoration was greatly diminished. A few mornings ago he left the ward very early to retire to the water-closet, and he fell on the floor; he was carried back to the ward, and lived only a few hours. The *post mortem* examination exhibits a very well-marked example of the emphysematous condition of both lungs, with a great deal of blood retained in their structure; there is not much evidence of chronic bronchitis, but dispersed through the lungs here and there are well-marked nodules of pulmonary apoplexy, large, firm, and hard, and distinctly circumscribed. On examining the heart we find the whole organ enlarged, the right ventricle very large, the cavity greatly dilated, and the walls greatly hypertrophied, and the right auriculo-ventricular opening very wide, allowing the introduction of four fingers, easily. The left ventricle is also enlarged, and its walls are greatly hypertrophied. There is not any narrowing of the left auriculo-ventricular opening; it is, perhaps, a little wider than normal, and the mitral valve is somewhat thickened—enough, certainly, to allow freely of regurgitation from the ventricle into the auricle. On examining the auricles we find both enlarged. The right auricle is greatly enlarged, and both the Eustachian valves are larger than normal. The left Eustachian valve, which is not usually very easy to demonstrate, is perfectly distinct and well-formed; and, as we presumed from the permanence of the cerulean complexion, there is a free communication between the two auricles through which a probe passes very freely. This, so far, is not an uncommon case of the relation that we might expect to find between lungs diseased in this way and a heart suffering from congenital malformation; but there is another point of greater interest connected with this case. On examining for what could have produced such an amount of hypertrophy of the left ventricle as existed in this case, and not considering that the large amount of regurgitation which was possible between the ventricle and auricle sufficient to account for it, we made further investigation. It was not to be found in any renal degeneration, and on looking for obstructive disease in the aorta, we failed to find any; but on tracing the aorta for some way we found a condition of disease which appears to me to be very rare indeed. The aorta is not diseased at its commencement; but as we pass up the arch and towards the abdominal aorta, we find the descending aorta covered throughout with an exudation which encircles the entire circumference of the vessel. It can be raised from the lining membrane without much

trouble, but is evidently attached to it. There does not appear to be any degeneration of the internal coat of the aorta. The lining membrane appears to be perfectly smooth; and when we examine the aorta carefully for any calcareous deposit which might be the cause of this form of inflammatory exudation, as I believe it to be, we cannot find any.

The question is what is the nature of this deposit? During the last few days of this man's life there were no symptoms observed to make us believe he was labouring under any fresh attack of an inflammatory character. He lay in bed till the end of the day perfectly quiet; his breathing was rather improving; the condition of his pulse was rather improving, and I think as late as last Wednesday morning we made him sit up in bed, and made a very careful examination of his chest and of the entire symptoms. So that if it be an inflammatory effusion it certainly is of a very low character. It is clearly not a case of ordinary arteritis. It has none of the anatomical characters of that disease; there is nothing of effusion into the coats of the arteries; nothing of the appearances we usually find evidenced in the arch of the aorta, comparatively so often the seat of that disease; no swelling or puffing or inflation of the lining membrane; simply a discolouration of the lining membrane of the aorta, and this purulent effusion on it. Another consideration which may tend to prove it to be a form of purulent arteritis, is that these forms of low inflammations are, generally speaking, not isolated. When they occur in one part of the body we have some evidence of a low form of disease occurring elsewhere; and on carefully going over the *post mortem* appearances in the present case we find on the surface of the pericardium a more or less recent pericarditis. The serous membrane is slightly rough and red, and there is a thin layer of soft plastic lymph observable, and a semi-fluid effusion of the same character is also found to some extent here and there in the peritoneum, over the surface of the bowels. So that for these reasons I am inclined to think this is one example of that rare form of disease which has been described by Cruveilhier as *purulent arteritis.*

Dr. Hayden has favoured me with the following report of a microscopical examination of the exudation:—

"The layer of adventitious deposit found upon the lining membrane of the aorta has been again, at your request, subject to microscopic examination by me. In both the examinations which I made of it I found only fibrillary matter, which, on treatment with strong acetic acid, disappeared, leaving only a granular stratum, interspersed with oval and spindle-shaped nuclei and a few granular corpuscles. I have no doubt it was an inflammatory exudation."—*February* 1, 1868.

Tuberculous Disease of the Ovum.—Dr. Beatty said that through the kindness of Dr. Bigger he was able to lay before the Society a specimen

of a rather rare form of disease of the human ovum. It was a class of affections not very clearly understood or known, and therefore he thought every specimen produced would add so much the more to their knowledge. It was not more than a couple of hours since Dr. Bigger had brought the specimen to him, accompanied with a short account of the case of the individual from whom it came. She was aged twenty-five years, of fresh, blonde complexion, and blue eyes. She had been married five years, and had one child the year she was married, which child she nursed, and she was not pregnant from that time until five months ago, at which time the catamenia ceased. Six or seven weeks after the cessation of the menstruation her husband was seized with an epileptic fit, and she was greatly terrified. She never increased in size, nor had she any feeling of quickening, but her breasts enlarged, and well-marked areolæ were formed. She suffered from malaise, never felt well, lost strength and appetite, and a week ago got inflammation of the vagina. So severely was she affected that she was hardly able to walk, and she suffered intense pain and sickness. Dr. Bigger stated that it was impossible to make an examination. She was then ordered to keep quiet, cooling applications were placed to the vagina, and in a few days the ovum which he now exhibited was discharged. In the first place, they would remark that it was a very small sized ovum for a woman who was five months pregnant, but when they came to see the nature of the affection that he would call their attention to, they would understand why it was so. The ovum was what had been described by Dr. Granville as the *ovum tuberculosum*. There was the little fetus hanging down from the interior, with its globular umbilical cord, which was its usual form in the ovum at a very early period; but it would be seen that the fetus itself was blighted, and seemed never to have exceeded in growth that of a few weeks, while the interior of the ovum was studded over with a number of eminences which in a recent state were highly vascular, red, and extremely like the drawing which he would show them in Dr. Granville's interesting book on abortions. He was not aware that a specimen of this kind of disease of the ovum had been previously brought before the Pathological Society, and he therefore thought it would be interesting to do so on the present occasion. Dr. Beatty then exhibited one of the plates in Dr. Granville's work representing the *ovum tuberculosum*, and pointed out its exact resemblance to the specimen in his hand. There was the blighted ovum, with the large umbilical cord, and the tubercular deposit all round, completely altering the character of the ground from which the fetus could by any possibility obtain subsistence; thence the early death of the fetus as a consequence, and after a certain period the expulsion of the ovum would follow, as it always did whenever the fetus died in utero, unless there was occlusion.—*February* 15, 1868.

Aneurism of the Thoracic Aorta.—Dr. Finny said:—I have been requested to lay before the members of the Pathological Society this specimen of aneurism of the thoracic aorta for Dr. Orms Snag, 5th Dragoon Guards, under whose care the patient was from whom it was taken.

The following are the particulars of the case while under observation:

Sergeant J. D., of the 5th Dragoon Guards, was sent to me for the purpose of being medically examined previous to re-engagement at the beginning of last September. I found him a strong, muscular man, of 5 ft. 10 in. in height, ten years' service, all of which was at home, and he had the character of being a steady and temperate man. During the period of service he had been under medical care on two occasions only, once for syphilis, which was unfollowed by secondaries, and the second occasion for an attaek of diarrhea. On examining his chest with the stethoscope I discovered a well-marked systolic bellows murmur audible along the entire course of the ascending aorta, but which seemed to increase in intensity the nearer the stethoscope was placed to the heart. There were also well-marked evidences of the enlargement of that organ. With these exceptions the man seemed in perfect health, and had no symptom whatever either of disordered circulation or respiration. Greatly to his disgust and apparent astonishment, however, I refused to pass him, advising him to be very careful in his manner of living, &c., and recommended him to come to hospital and get invalided, but he persisted he was quite well, said he could do his duty, and wished to continue doing it.

On the morning of 6th December, 1867, I was called suddenly to see him, he having, the messenger said, fallen down in a fit. I found he had been standing in the barrack square, had suddenly complained of weakness, and then fallen down apparently lifeless. On my way to the case I quite made up my mind that the aneurism had burst. He was immediately conveyed to hospital, where restoratives in the shape of ammonia, &c., were administered, and warmth applied to the extremities. At this time his lips were blue, his extremities cold, and the pulse could hardly be felt. Somewhat to my astonishment, reaction rapidly set in, and half an hour after admission he was quite himself again, and stuck to his former story of being easy. I saw him several times during the day, when he seemed quite well, but the auscultatory signs were the same, and I expressed my opinion to the staff surgeon, whom I requested to see the case with me, that the aneurism existed at the junction of the heart and aorta. No change took place in the symptoms or physical signs up to 8 a.m. next morning, when, after eating a hearty breakfast, he suddenly fell back on the pillow and expired almost instantaneously.

The following are the *post mortem* appearances. On opening the thorax I found it quite free from effused blood; the lungs were everywhere remarkably healthy. The bag of the pericardium, however, was enor-

mously distended, and on opening it I found this was caused by a mass of coagulated blood of a firm consistence. Some old adhesions seemed to exist between the pericardium and the heart. The latter was much enlarged, and weighed $1\frac{1}{4}$ lbs. The source of the blood was found to be from a ruptured aneurismal pouch so near the root of the aorta as to project within the pericardium. The walls of the left ventricle were thickened, all the valves were healthy, and the interior of the aorta small, of a uniform yellowish-white colour, and free from atheromatous degeneration. In the left sinus of Valsalva, just beside the opening of the coronary artery, was a hole large enough to admit the little finger, communicating with the above-mentioned pouch, which latter was of the size of a large walnut, and the walls in some places were as thin as a wafer. With the exception of the liver, which was somewhat abnormally enlarged, the rest of the body was healthy.

This case seems to possess peculiar interest in many respects; first, as confirmatory of the correctness of the opinion of all writers on the subject, as to the great latency and want of accordance between the symptoms and physical signs of internal aneurism, and the extent of the disease. To such a degree is this the case that Drs. Watson, Fuller, and all the authors I have consulted agree in stating it is next to impossible to detect, during life, the existence of an aneurism in this situation, which seldom reaches to the size of a walnut.

This case is interesting, in the second place, on account of its rarity, not so much the infrequency of the occurrence of aneurism of the sinus of Valsalva (although it is a comparatively rare disease, as may be seen by the fact that in the records of the new series of this Society I find only two cases related), as the rarity of the opportunity of examining the patient before death, for, as the aneurism is generally so small at the time of perforation, the inconvenience resulting is not sufficient to induce the patient to seek relief.

The opinion of some that aneurism in this situation is invariably formed by the dilatation of all the coats of the artery receives no confirmation in this specimen, as it is evident here the inner coat has given way and the coverings of the pouch consist of the outer coats of the vessel and the serous layer of the pericardium.

Further, this case forms also an exception to the rule laid down by Dr. R. Smith as to the direction the aneurisms in this situation take. In his cases, so ably delineated in *Dublin Medical Journal*, Vol IX., as also in a case communicated by Dr. Gordon, and that of Dr. Bennett, to which I alluded before, the aneurisms invariably took a downward course, while the tumour before you evidently is passing upwards. As an explanation for this unusual direction, my friend Dr. Bennett suggests that the aneurism has followed the arterial reflection of the pericardium instead of that passing to the veins.

The point, however, which I consider peculiarly deserving notice in the case detailed is the length of time the patient survived the first rupture of the sac, for there seems to me no doubt that the first attack of syncope and collapse on the 6th December corresponded with the rupture of the sac into the pericardium. To explain how the patient rallied and regained, for a space of twenty-four hours, seemingly perfect health, we must look to the state of the pericardium itself. It shows evidences of old adhesions. These adhesions, I think, limited the effusion of blood when the rupture took place to a small amount; finally, however (after, probably, some undue exertion on the patient's part after breakfast), they gave way, and the hemorrhage becoming unrestrained, was instantly followed by death. This, to my mind, seems to be more likely the explanation of these phenomena than that the orifice was extremely small in the first instance, or was plugged temporarily by a fibrinous clot. For while I don't deny the possibility of either being the cause of the arrest in the fatal symptoms, yet the probabilities are against it, as we know instant death has followed a very minute opening of the aorta into the pericardium, as, for example, in the case of a girl who accidentally ran a needle into her chest, and which perforated the aorta within the pericardial reflexion. If this interpretation of the case, which I have ventured to give, be the correct one, it adds much to its importance, and brings it into the number of those rare exceptions to the rule so generally laid down by all the principal authorities on the subject, that rupture of aneurism of the root of the aorta into the pericardial cavity is always instantaneously fatal. In Professor Stokes' able book on the Heart, I find a case recorded somewhat similar to this, in which adhesions of the pericardium existed and permitted only a gradual dilatation of the sac, so that the sinking of the vital powers was very protracted.

With the exception of this case of Dr. Stokes, and another which Professor Law informs me occurred in his practice, I do not know of any others in which the hemorrhage into the pericardium from a ruptured aneurismal pouch was checked by previous adhesions. For these several reasons I considered the case worth laying before the members of this Society.—*February* 15, 1868.

Gunshot Wound—Extensive Injuries of the Pelvic Viscera.—Dr. White said the pathological specimens which he now exhibited were taken from the body of the young man named Michael Briscoe, who was shot in Gregg's-lane on the previous Thursday week. He was brought into Jervis-street Hospital at 8·30 o'clock on that evening. He was then in a state of semi-collapse. There was a small wound, evidently a gunshot wound, in the right groin, over Poupart's ligament, about an inch from the spinous process of the ilium. He (Dr. White) had not an opportunity of seeing him in the first instance. Dr. Stapleton saw him soon

after he was brought in. There was then some hemorrhage. Dr. Stapleton examined the wound. Passing a probe inward he found it passed behind the femoral artery, and not feeling any trace of the bullet he did not like to push the exploration further, and closed the wound. The case was then handed over to his (Dr. White's) care. He remained the greater portion of Thursday night with the patient, who was vomiting from time to time, and who, as the night advanced, began to suffer very acutely from pain, referable to the lower part of the sternum. His appearance seemed to indicate some hemorrhage going on internally. Externally there was no hemorrhage from the time the wound closed. He got relief between three and four o'clock in the morning, and also ceased to vomit. He then remained at ease from four o'clock in the morning until between twelve and one o'clock on Friday, when the vomiting returned, and with it some pain in the abdomen, on pressure over the right iliac regions. In the afternoon of Friday, at half-past three o'clock, he (Dr. White) saw the patient, and found a good deal of abdominal tenderness on the right side, extending from the epigastrium to the right iliac region. On the left side there was no pain on pressure. He saw him at half-past seven o'clock, and found him not perfectly recovered from collapse. His features were pinched, his pulse 160; there was an increase of tenderness of the abdomen, and some tympany. He had a return of vomiting. He saw him at eleven o'clock that night. The pulse had then come down to 132. He expressed himself as being much easier, and he left him at twelve. He did not see him again until Saturday morning. He then found the abdominal symptoms increasing; the belly was very tense; the pain, on pressure, which had been confined to the right side, extended over the entire abdomen. He vomited several times during the night, although considerably under the influence of opium. He could bear a light poultice on the abdomen, but not the weight of much clothes. The decubitus was on the back. The pulse rose to 160, and on Saturday morning, after ten or eleven o'clock, he was unable to count it. During the afternoon the symptoms of collapse increased, though he was conscious and able to converse. As the evening advanced his features became sunk and pinched, and when he (Dr. White) saw him between ten and eleven o'clock he was evidently sinking. He retained his faculties up to the last moment. There was some abdominal uneasiness, but no pain, except on pressure. The vomiting continued at intervals up to the time of death. There was numbness throughout over the course of the anterior crural nerve. In making the *post mortem* examination he opened the abdominal cavity, reflecting it backwards. He did so with the view of confirming his opinion, which was, that the man died of peritonitis and hemorrhage into the abdominal cavity, the result of a bullet wound penetrating the peritoneum and perforating the intestines.

The abdominal cavity was full of bloody serum, with large clots of blood in the lower parts, the pelvis being full of dark clots; whilst in other parts the clots appeared partially softened into pus. The intestines were distended with gas, and covered with lymph, the product of recent inflammation. The portion of the small intestines which lay in the pelvis between the rectum and bladder was quite glued together with masses of organized lymph.

On emptying out the serum and clots, a small slit-like rent was seen in the peritoneum corresponding to the inner edge of the psoas muscle, and in this situation the sub-serous cellular tissue was evidently full of effused blood. At the lower and posterior part of the pelvis there was a rent larger in size and circular in shape. It was just at the left side of the sacrum, near its upper part, and so close to the rectum as to denude the muscular fibres of the rectum in that situation, but without entering the intestine. On tracing the wound from the external opening it was found to pass through the upper edge of Poupart's ligament, about an inch from its attachment to the ilium, passing inwards and backwards through the psoas muscle, through the posterior part of the anterior crural nerve, through the external iliac vein, and so through the slit-like opening in the peritoneum. The wound in the lower and posterior part of the pelvis was then traced outwards by the left side of the sacrum, and into the gluteus muscle, where, deeply imbedded in the muscle, portions of clothing were found, and about half an inch further on the bullet. The portion of intestine which lay between the rectum and bladder was perforated by the bullet in several places, but the wounds were closed by effused lymph, which glued the intestines together.

There were six openings in the intestines, and it seems a matter of surprise that he lived so long—from Thursday evening at eight o'clock until Sunday morning at one o'clock. The immediate cause of death was peritonitis.—*March* 1*st*, 1868.

Intra-uterine Fractures.—Dr. Kidd exhibited drawings, photographs, and the skeleton of a child born with numerous fractures, in the Coombe Lying-in Hospital, on the 13th of July, 1866. The mother was aged sixteen, was unmarried, and could not fix the date of conception; her labour was easy and natural, and she made a good recovery. The child was evidently somewhat immature, and was born at the end of the eighth month probably of pregnancy.

It presented a very remarkable appearance from the deformity of its limbs, the seeming intelligence and the remarkable beauty of its features; its body was well developed, its head was large and covered with hair, but its limbs were distorted, bent, and doubled on themselves. On examination during life it was found that the long bones were broken in several places, and the fragments were so loose and detached from one another, that the

limbs could be bent or put in any position. The child exhibited no signs of inconvenience or suffering. It took the breast freely, and seemed to thrive well till the ninth day, when it had a fit of convulsions, in which it died.

A careful examination of the body was made after death. It measured sixteen inches in a straight line from the bregma to the anus; it weighed four pounds fourteen ounces. The viscera generally were healthy, with the exception of an unusual fulness of veins of the dura mater, and the presence of some serum in the pericardium, but it is probable these were both *post mortem* changes. The bones of the head were very badly developed, the frontal, parietal, and occipital, presented merely central points of ossification. The bones of the base of the skull were also very imperfectly developed, and were each divided into several portions.

Both humeri were fractured below the head, the radius and ulna of each side were broken in two places. The femurs were both broken below the trochanters, and again in the lower third. The bones of the legs were also the seat of double fractures. The bones of the hands and feet were entire. The ribs of both sides, from the third to the tenth inclusive, were each broken in two places. In all fifty-four fractures were discovered. Many of the fragments were covered with callus, in some places forming a complete union, while in others no attempt at repair had been made, showing that the fractures had occurred at different dates. There were no traces of inflammatory action at the fractures.

The occurrence of intra-uterine fracture from violence done to the mother during pregnancy, is well known, in one case, described by the late Dr. Montgomery; the child was born dead, with several fractures and other injuries, a few hours after the mother had fallen out of a window twenty-five feet high, an accident that did not prove fatal to her. Brodhurst has recorded two very similar cases. The children were born alive, but not till some time after the injuries were inflicted, and in both cases the bones were re-united. Fractures are also sometimes caused by unskilful manipulations during delivery; but it is obvious that the lesions in the present case could not be attributed to either of these causes. The true explanation seems to be that the bones were in an unhealthy or rickety condition, and that they were so was evident from their appearance and softness, and that the fractures were produced by muscular action. There are very many cases of intra-uterine fracture from this cause on record, of which the most remarkable is that quoted by Malgaigne from Chaussier, in which there were altogether 113 fractures found in a child who lived twenty-four hours after birth.—21*st March*, 1868.

Obstruction of the Bowels—Extremely Long and Tortuous Colon—Extensive Atheromatous Degeneration of the Arteries—Ramolissement of Spinal Chord.—Dr. Hewitt said the case which he was now about to bring under the notice of the Society was one of some interest. It was that of

a woman between seventy and eighty years of age, who was admitted to the City of Dublin Hospital under his care on the 3rd of March, presenting the following symptoms. The pulse was 88, and was extremely hard. She had a dry, brown tongue, which was extremely rough, and she had not had any motion of the bowels for ten or twelve days before. For two or three months previously she had had only a few motions—that is, about once or twice in the month. There was neither pain nor tenderness in the abdomen, which was apparently so lax that he could draw up the integument, and hold it in his hand three or four inches from the surface; but this was chiefly due, although the woman had never been pregnant, to the thickening of the parietes and the great quantity of fat deposited in the subcutaneous areolar tissue. There was, however, great resistance on pressure of the abdomen, but no definite tumour could be detected by either palpation or percussion. In consequence of the state of the tongue, he thought it advisable to give no cathartics by the mouth, and he directed the nurse to administer an injection every four hours till the bowels were moved. After two injections had been given a large quantity of hardened feces was passed, and the woman was a good deal better the next day. The tongue had lost its dryness and the pulse some of its hardness. The injections were repeated, and were discontinued because they brought nothing away. For three or four days she appeared somewhat better, but still lost appetite, and the tongue became again dry and hard. It was then thought advisable to try the effect of cathartics by the mouth, and she was ordered a combination of rhubarb pill and croton oil. Two or three of these having been vomited, they were discontinued. She was given one grain of opium and one-fourth of a grain of extract of belladonna every four hours. After she had taken three or four of these she exhibited some symptoms of narcotism, and he thought that it would serve no good purpose to persist in this line of treatment. As the constipation still continued, and the belly had lost some of its tenseness, and there was entire absence of pain or tenderness, he considered there might be a paralysed condition of the bowels, and he tried extract of nux vomica, in combination with rhubarb pill, and the enemata were ordered to be renewed. On the day after the exhibition of this she first complained of weakness of the lower extremities, having got out of bed after the administration of an enema, and next morning she had spasms in the upper and lower limbs. At this time he sought the advice of Professor Benson. They thought it advisable to administer larger injections than those previously administered. The long tube was passed into the bowels without difficulty, and eight or nine pints of warm soap and water were slowly injected into the bowels before it began to return. When the injection fluid returned it carried with it a quantity of feculent matter in a state of solution, and containing some very small scybalæ about the size of a

pea, but not more than one-third of the quantity injected was returned. After the lapse of six hours, during which small quantities of liquid feces were passed from time to time, there was a further injection of four pints of warm water containing salt and tincture of assafetida, and this brought away much gas and some feculent matter, but no scybala. Purgatives were now administered by the mouth, and were retained, but there was no action of the bowels except when the injection was given. The spasms in the muscles of the extremities gave her much distress, especially when she made an effort to move, or when she was exposed to the air by removing the bed-clothes, but there was no loss of sensation, and she could easily move herself in bed and raise the limbs.

As she continued to refuse food and the tongue was dry and brown, and the abdomen still very tense, and in the iliac regions dull on percussion, it was resolved to try the effects of galvanism, which was at first applied to the surface of the abdomen and along the spine; it gave no pain, and had very little effect on the muscles of the abdominal wall. It was subsequently used in the manner recommended by Dr. Stokes, in a paper published in the *Dublin Quarterly Journal* in 1864, by passing a copper wire, guarded by sponge, into the bowel, and applying the other pole of the battery to the abdominal parietes; but although this caused some pain and some spasm of the abdominal muscles, it had no effect on the bowels. For several days before her death she had exhibited a most extraordinary slowness of respiration, which was of a sighing character, and varied from four to eight in the minute, although the pulse was 90. The respiration had not the character of that usual in fatty heart; and although there was well-marked arcus senilis, the character of the pulse, which was unusually full and hard, proved that there was no fatty heart. Dr. Benson thought it might be due to fatty degeneration of the diaphragm, as he had seen such cases give rise to very slow breathing. There was a well-marked systolic murmur at the apex, and one of a different character at the base, but more intense at the right sterno-clavicular articulation; it was also heard in the carotids. The diagnosis was made of mitral regurgitation and atheromatous deposit in the aorta, and in the aortic valves without regurgitation, and this was confirmed by the autopsy.

For some days before death she had small quantities of whiskey, mixed with water, given frequently, and strong beèf-tea and eggs. On the 17th the pulse was observed to be weaker, and the quantity of stimulants was increased. The large injections were twice administered, and were discontinued, as the water returned quite free from feculent matter, and it was evident that the bowel was clear as far as the water could reach. Towards evening, on the 17th, she began to fail rapidly; the pulse was feeble, irregular, and often difficult to count, and respiration rose for a few hours before death to 20. The heart was examined by Dr. Benson and by myself more than once during the day, but

nothing except failure of power was perceptible. She died at 12.30 a.m. on the 18th, notwithstanding the liberal use of stimulants.

At the autopsy it was found that the colon was of unusual length, that it was sharply curved in the left hypochondrium, and then coursed across the abdomen into the right iliac region, where it touched the cecum and then turned sharply back to the left iliac fossa, whence it passed down into the pelvis to form the rectum. There was neither stricture, intussusception, or twist, and the bowels contained nothing but gas and a small quantity of liquid feces, containing some orange and apple seeds. The small intestines were free from stricture and much collapsed, and contained a considerable amount of mucus tinged with bile. The lower part of the rectum was greatly congested, but there was no evidence of inflammation either of the intestines or of the peritoneum. The diaphragm was healthy.

The pericardium contained a small quantity of turbid serum, with a few shreds of soft recent lymph floating in it; the serous layer of the pericardium was intensely injected, and there was some recent lymph about the great vessels. This pericarditis was evidently of very recent production, and had not proceeded to an extent sufficient to give rise to physical signs, although it doubtless hastened the fatal issue. There was considerable atheromatous disease of the aorta and of the aortic valves, and some hypertrophy of the left ventricle. The mitral valves were diseased, though not to a very great extent; they were thickened and puckered, but there was no constriction of the orifice. The brain was not congested. All the arteries at the base were diseased; the atheromatous deposit was found even in the minute branches of the middle cerebral and callosal arteries. There was not a trace of softening in any part of the brain, or any clot or fluid effusion. The spinal cord was most carefully removed, and it was found that while the lumbar and lower dorsal portion presented its usual appearance, the upper two-fifths were flattened out, and a portion in the upper dorsal region was very soft and pap-like. This softening was that variety called white softening, and was doubtless due to the obstruction in the arteries due to atheromatous deposit. The slow respiration and muscular spasms were curious phenomena, due, he thought, to this condition of the cord; and death was doubtless due to the asthenia produced by the obstruction in the paralysed bowel, aggravated by the diseased condition of the heart and spinal cord. The paralysis of the bowel was also in great part due to the diseased nerve centre, aggravated, doubtless, by the unusually long and tortuous colon which had long acted as a receptacle for feces; this view was borne out by the result of the transmission of the galvanic current, which demonstrated complete absence of electro-sensibility. The spasms in the limbs were purely reflex.—*March 21st*, 1868.

Secondary Rheumatic Pericarditis.—Dr. Gordon said the heart which he now exhibited was taken from a young woman who died on the previous day. It presented very well all the anatomical appearances of secondary pericarditis. The history of the case, so far as he had been able to collect it, was, that twelve months ago this girl was the subject of rheumatic fever, and at that time she had cardiac complication. However, she recovered from that to a certain extent so as to be able to leave hospital and go about, but she was never considered healthy afterwards. She had always palpitation, and hard breathing on the least exertion. It is now obvious that at that time she made a recovery from pericarditis by a very general adhesion of the folds of the pericardium, and also that she suffered at the same time from some slight endocardial inflammation. She continued in this state of impaired health for the last year, and was admitted into the Whitworth Hospital on the 15th February last, being then sixteen years of age. When admitted, she had been already seven days ill, and the symptoms under which she laboured for those seven days were symptoms of ordinary rheumatic fever, with this remarkable exception, that although she had pains in her limbs and pains in her joints there was no swelling or effusion into any of the joints. She had on the day of her admission this fever still existing, great dyspnea, and a very peculiar form of breathing, very rapid, almost entirely carried on by the diaphragm, and she adopted a curious way of endeavouring to relieve her breathing from time to time. She with her own hands made pressure on both sides of the chest, so as to try to fix the ribs and support the pericardium. She was pale of aspect, quite blanched, and sleepless. It was not very easy to come to a diagnosis as to the exact nature of the cardiac disease. A loud systolic murmur, loudest towards the apex, and extending down, audible also behind, left no doubt that there was a diseased mitral orifice, but she had besides this dulness over the pericardial region to a great extent. The first thing which seemed probable was, that it was a case of pericardial effusion. There was at the time no *exo-cardial* murmur, no *frottement* in whatever position she was placed, and no great intensity of impulse of the heart. On the contrary, the impulse of the heart was rather weak. The remarkable physical sign was the great extent of dulness. He was under the impression that it was a true pericarditis which had rapidly arisen before she came into hospital, and rapidly gone on to effusion; or, more likely, from the intensity of the symptoms under which she was still suffering, a case of purulent inflammation of the heart, in which the inflammation, extending to the muscular structure, produced this extreme cardiac debility. She had none of the appearances of a person suffering under pericardial effusion—none of that dark hue of countenance or very great congestion of the veins associated with that affection. She got small doses of mercury, large

doses of opium, to relieve pain, and was supported by wine, &c., very freely. This treatment was continued steadily for about a week, when one important symptom was relieved—the orthopnea. After being a week in the hospital the patient was able to lie down with comfort; but even this relief was of short duration. So far as the cardiac symptoms were concerned there was extraordinarily little alteration during her stay in hospital, but after a very short time she got vomiting. The dyspnea and orthopnea, which were before so distressing, returned; she became dropsical in the lower extremities, and the breathing became so rapid that she had to lean forward to perform the act of respiration. A day or so before her death it became evident that she was suffering from pulmonary congestion. On making a *post mortem* examination there were found well-marked evidences of the former attack of pericarditis. There were parts in which, no matter what amount of traction or dissection was used, separation of the two folds of the pericardium could not be affected. In addition to this there had been also adhesive inflammation of the outer layers of the pericardium, causing an obliteration of the anterior mediastinum and thickening of the adjoining structures. The effect of this was, that what is usually termed the free layer of the pericardium was more or less fixed; and when the two serous layers became adherent, the heart itself became fixed also, and, as a consequence, became hypertrophied with dilated cavities. On this point, perhaps, turns the solution of that question not yet determined—"What is the effect of obliteration of the pericardium upon the heart as to its hypertrophy or atrophy?" In a communication made to this Society by our learned Secretary, Dr. Stokes, he stated, I think, on the authority of Professor Smith, that many cases of adherent pericardium were followed by atrophy of the heart, and perhaps as many by its hypertrophy; and this becomes perfectly intelligible if we examine the two conditions under which it may occur. And omitting altogether the cases in which endocarditis also occurs, and produces its consequences of hypertrophy or atrophy, if in addition to the inflammation which takes place in the interior of the pericardium, there be also an adhesive exo-pericarditis (the existence of which, even during life, Fuller and others are prepared to demonstrate); then the condition of parts will be as in the case before the Society, the external fibro-cellular layer of the pericardium adherent to the wall of the chest, the cavity of the pericardium obliterated; and then an unyielding pericardium investing the heart will of necessity cause a dilation of its cavities and more or less hypertrophy of its walls; whereas if the external fibro-cellular layer be unattached, except through the adhesion of the serous membranes, the consequences will be more or less compression, and consequent atrophy of the heart. A somewhat similar condition prevails in certain forms of pleuritis. If the layers of the pleura have adhered, and from any cause

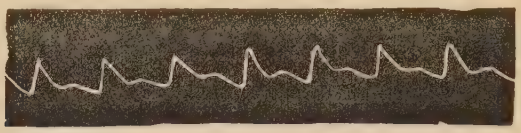
the wall of the chest is unyielding, the consequence will be a dilatation of the bronchial tubes, or other yielding parts of the lung; whereas, if the super imposition of lymph be confined to the pulmonary pleura, the consequence will be a compressed and atrophied lung. The present case showed the amount of hypertrophy possible to take place within a year under such circumstances, and in a young person; the shape of the heart was much altered; it was shorter and wider than natural, and on making the usual section of it, both auriculo-ventricular openings were found dilated, the left very much so, admitting the introduction of four fingers. There was not perfect obliteration of the pericardium in the former attack. In some places the amount of lymph thrown out was very great, layer upon layer well organized, and having now very much the appearance of muscular tissue; but in other parts there were small pockets or lacunæ, which were the seat of recent inflammation, the inflammatory exudation consisting in very soft, almost diffluent, lymph. This secondary rheumatic pericarditis occurring in the different chambers where the obliteration had not been so intimately carried out, and affecting also the organized false membrane, caused an amount of suffering and pain which seemed to be of a different character from the symptoms of what might be termed cases of ordinary pericarditis. The intensity of the suffering in this case may be attributed to the fact, that the whole poison of the rheumatic fever spent itself here, for although there were muscular pains in the limbs and pains in the joints, there was no effusion into any joint in the body.—*March* 21*st*, 1868.

Cerebro-Spinal Arachnitis.—Dr. Grimshaw exhibited the brain and portions of the spinal cord removed from the body of Patrick E———, aged twenty years, late a member of the Royal Irish Constabulary.

The patient was admitted into Steevens' Hospital under the care of Dr. Burke; a few days after admission he was transferred to Dr. Grimshaw, under whose care he continued during a considerable portion of his illness.

The patient was admitted on January 13th, 1868, in a state of collapse, the muscles being rigid; there appeared to be some hyperesthesia of the arms; there were numerous purpuric spots slightly raised, and shotty to the feel, scattered over the body and limbs, being especially plentiful on the legs. His illness, which commenced with vomiting of greenish matter, pain in the head, and stiffness of the neck, had continued for three days before admission. The case was at once diagnosed to be one of cerebro-spinal meningitis. On the following day he said he was considerably better; he was quite sensible, his limbs were warmer, and the stiffness less than on admission; the hyperesthesia was considerably more evident than on the previous day; complained much of pain in head and stiffness

of neck; his pulse was that of imperfectly-filled arteries, rapid and jerking, as shown by the accompanying tracing.



On the 14th day he was so much better that he considered himself convalescent. On the 15th day the pain in the head returned, causing great suffering; there was also vomiting; temperature in axilla, 99°.5 (Fah.) 16th day—Pain gone; temperature, 100°. 17th day—Pain returned; temperature, 102°.5. 18th day—Considerably improved; temperature, 102°.5. This improvement continued until the 21st day, when he was seized with more violent pain than he had yet experienced, and when seen by Dr. Grimshaw, at 10 a.m., was screaming from the intensity of the pain. At this time his temperature reached the extreme height of 110°, falling to 105°.5 at one o'clock, at which time the patient vomited, and his condition considerably improved. From this time the patient went on, sometimes better, sometimes worse, becoming greatly wasted and passing under him. Two small abscesses in the neck, and large bed sores formed towards the end of February. On March the 23rd (the 75th day) a large bulla formed on the left thumb, and the patient died on the following day at half-past seven a.m., the duration of the illness having been 76 days. On examination of the body a large quantity of fluid was found effused in the sub-arachnoid spaces; there was slight effusion of lymph (which was still visible) on the arachnoid at the base of the brain. No lymphy exudation was observable on any part of the membranes of the cord. The consistence of the cord seemed normal, except near the lower extremity, where it seemed firmer than natural.

Immediately after their removal from the body, portions selected from various parts of the brain and spinal cord were submitted to microscopical examination by Dr. Grimshaw's friend and colleague Dr. Robert M'Donnell, with a view of ascertaining if any minute structural change had taken place, but no departure from the normal condition of the nerve cells could be discovered.

Dr. Grimshaw remarked upon the contrast between this case and one which he detailed to the Society on the 8th of the previous month, which terminated fatally in 86 hours; and also pointed out that the case was remarkable for the high temperature attained on the 21st day of the disease, there being only one recorded instance of so high a temperature occurring in cerebro-spinal meningitis.

Wunderlich in one case noted the temperature of 107°, 108°, and 110° as occurring immediately before death. Dr. Sanderson records a temperature of 104°. Dr. Grimshaw has noted temperatures of 104°.5, 104°.25, 103°, and 103° respectively, in five cases where the temperature seemed to be unusually high.

Another point of interest about the case was its being one of a number which arose at the depot of the Royal Irish Constabulary, in the Phœnix Park.—*March 28th*, 1868.

Spontaneous Rupture of the Heart.—Dr. T. E. Little said that cases of spontaneous rupture of the heart were sufficiently rare to render them of interest in a pathological point of view. He had the honour of now presenting a specimen of that lesion to the notice of the Society, which possessed some points of collateral interest. The subject from whom it was taken was a gentleman, aged sixty or sixty-five, who had never suffered from any symptoms referable to the heart before the attack which terminated fatally. The principal thing noticeable about him was that of late years he had fallen into a condition of extreme corpulence; he was sixteen stone weight, and yet a man of small stature. The symptoms which ushered in his death were the following:—About eight hours before his death, while after his ordinary dinner, he was attacked by a sudden feeling of oppression about the precordium, and a sense of weakness, and he vomited very considerably. In a short time he recovered, so much so that he was able to take a walk. During the rest of the evening he felt weak, shivered once or twice, and had a couple of attacks of vomiting, but felt so well that he would not allow a Doctor to be called in. He went to bed, and soon afterwards felt a sudden return of the feeling of oppression, and died perfectly quietly—"as if in a faint, his wife said." He (Dr. Little) did not see the gentleman during life. He made a *post mortem* examination on the following day. As he looked at the corpse there was nothing remarkable about it, except its extreme corpulence, and the great extent of the *post mortem* staining, and also that the temperature was higher than he should have expected it to be, considering the interval that had elapsed since death. He opened the chest and found the pericardium distended by an enormous amount of blood. He had in his mind Dr. Smith's observation as to free fat floating in the blood in cases of fatty degeneration of the heart, and he examined it very carefully, bearing this in mind, but with a negative result. The heart, as exhibited, was a little larger than usual; it weighed eleven and a half ounces. The principal thing observable on the surface was the very copious deposition of adipose tissue, which much exceeded the ordinary deposit of fat on a healthy heart. When he cut into its cavities, he found that the walls retained their normal dimensions, except at the auricles, where the deposit of fat was largest, and where they were

thinned. The aspect of the inside presented the appearance of *mottling* characteristic of fatty degeneration, though not to a great degree; and the fibres did not appear to the eye to be very pale. He then looked for the point of rupture. It had taken place at the usual position, *i.e.*, at the front of the apex of the left ventricle. On the outside it presented a slight slit-like appearance of about a quarter of an inch in length, and it had taken place at a point where a large mass of superficial fat was deposited. Inside, the carneæ columnæ were considerably broken up at the seat of rupture. There was another point in connexion with this of some interest. Just anterior to, and at the right side of, this *complete* rupture, there existed a second, and *partial*, rupture, the muscular fibres being completely broken through, but the pericardium remaining, as it could be still exhibited to remain, unruptured. This partial rupture was distended with blood, and presented on the surface of the heart a small ecchymotic-like spot: so that they had here, as it were, a comment upon what had occurred in the other, and more advanced lesion. Thus they could easily believe that the rupture did not occur as a single act; but that possibly, first a breaking up of the carneæ columnæ occurred, then a total rupture of the muscular walls (as in the case of partial rupture), and that not until some time afterwards did the pericardium give way.

The clinical history of the case also confirmed this view. The man had symptoms directly referable to some sudden lesion of the heart, which were not immediately fatal, and it was not until several attacks of these symptoms were repeated that he died. The valves were perfectly healthy, if we except the existence of a few spots of atheroma. The coronary arteries, with the same exception of a slight degree of atheromatous deposit, were also quite healthy; and there was nothing to explain the lesion in their condition.

A miscroscopic examination of the heart showed a condition of fatty degeneration of the cardiac muscular tissue, extremely capricious in its extent in different regions, so that he could with difficulty say where the greatest amount of it was to be found. Where the rupture took place some of the fibres were extremely degenerated, while in the immediate neighbourhood of it there were others unaffected, in which the transverse striæ were perfectly distinct. Strange to say, it was in the right auricles that he found the degeneration of the fibres to have advanced further than in any other place examined. The microscope also showed that in certain places a deposition of adipose tissue had occurred interstitially, *i.e.*, between the fibres in the substance of the cardiac walls; and this not as a mere extension of the superficial deposition, for it was most pronounced in certain of the musculi papillares.

If he spoke of the pathological anatomy of this heart, as to the fat it contained, there were three points to be considered: Firstly, adipose deposit on the outside; secondly, the insterstitial deposit of fat between the

fibres; and thirdly, the true fatty degeneration of the muscular fibres. Another fact observed by the microscope was, that imbedded in the fibres of the right side (where alone this was observed) there was a quantity of crystalline structures of a reddish brown appearance, which he took to be blood crystals. As to the etiology of these conditions, they might easily believe that the adipose depositions were connected with and a part of, the general corpulent condition that this man had fallen into during the latter years of his life; but he believed pathologists did not think fatty degeneration of the heart had any connexion with corpulency; nor indeed did there appear to be any good reason why such a connexion should be expected to exist in the heart's case, which clearly does not maintain in cases of the same lesion in other organs. It might be possible, however, that, whereas fatty degeneration was not connected with a general tendency to deposit of fat, at the same time the impediment placed upon the nutrition and functions of the organ by the quantity of fat collected round it might have led to this as a secondary lesion, and that thus the two conditions might stand to one another in the relation of cause and effect.—*March 28th*, 1868.

Abscess in the Wall of the Chest opening into the Lung.—Dr. Banks said:—A boy, aged eighteen, was admitted into the Whitworth Hospital on the 28th of March.

His health was reported to have been good up to a month before his admission, when, after exposure to cold, he was attacked with cough, accompanied by abundant purulent expectoration, which soon became fetid. The cough, with breathlessness on exertion, continued, and he rapidly lost flesh; and he was so weak on the day he was received into the hospital that he could with difficulty support himself in the erect posture.

The surface of the body was cold, and the countenance indicative of great anxiety; the breathing laboured and rapid (50 in a minute); pulse feeble, and 120.

Cough very distressing, and expectoration copious, and extremely offensive. On examination of the chest the left lung was found to be dull from apex to base, and the respiration, over a considerable extent, bronchial, with loud gurgling râles.

The upper and anterior part of the right lung was also dull. About one inch below the left nipple a swelling was observed which was about the size of a hen's egg, and painful on pressure. There was distinct fluctuation, but no impulse was perceptible on coughing.

The liberal administration of stimulants, and the application of warmth, caused him to rally from the almost moribund state in which he was on admission. The breathing and the pulse, however, rose in frequency, the former to 70, and the latter to 140.

It was determined to open the abscess, and accordingly an incision was made an inch below the nipple, where the integuments were glazed and thin, and the fluctuation was distinct. A large quantity of fetid pus, mixed with air, escaped, and marked relief to the most distressing symptoms followed the operation, and he could now lie on the right side, which he could not do previously.

The improvement was short-lived. The respiratory distress soon returned, and he died on the fourth day after his admission into hospital. The *post mortem* examination was made by Dr. Purser.

On examination of the external wall of the chest, the abscess was found to communicate with the cavity of the pleura by three openings, one between the fifth and sixth rib, and two between the sixth and seventh. The openings led to a cavity about the same size as the external abscess, situated between the parietal wall and the lung. The surface of the lung presented a depression which admitted the end of the little finger. No communication with a bronchus could be discovered, but air obviously escaped, as was observed on the opening of the abscess. The whole left lung, with the exception of the site of the internal abscess, was adherent to the parietal pleura. On making a section of the left lung, it was found to be infiltrated with pus; numerous little cavities, about the size of a hazel nut, existed, especially at the posterior part. The upper lobe was studded with a vast number of yellow spots about the size of a pin's head, closely resembling miliary tubercles, but which were found, like the larger, to be collections of pus.

The right lung was likewise infiltrated with pus over a great extent, so much so that the lower lobe seemed to be all that was available for respiration. The only other organ, in addition to the lungs, presenting morbid appearances, was the heart, on the surface of which were traces of recent inflammation.

Dr. Banks looked upon the case as one of no ordinary interest, and which, from his experience, he believed to be very rare. He could not recall to his memory having ever seen one of exactly a similar nature. So far as the lungs were concerned, he supposed the disease originated in pneumonia, which terminated in diffuse suppuration.

It was manifest that the external abscess made its way inwards, perforating the intercostal spaces, and finally establishing a communication with the lung, as was proved by the expulsion of air bubbles, after the first gush of fluid, on opening the abscess.—*April 4th*, 1868.

Chronic Rheumatic Arthritis of the Knee-Joint.—Mr. Edward Hamilton said the records of the Society abounded with cases of chronic rheumatic arthritis of the knee, and other joints, but as the specimen before them illustrated so well the anatomical characters of this disease, as it affected the knee, and presented some features in themselves so remarkable, that he

thought the specimen well worth being brought under their notice. The specimen was taken from the body of a man fifty years of age, brought for dissection. The knee-joint of the right side appeared to be considerably deformed, and enlarged. On removing the integuments, the subjacent fibrous structures were much thickened, and in some spots ossified. It was a remarkable fact, and attention had already been called to it by Mr. Adams, that the *ligamentum patellæ*[a] generally remains unaffected by this disease, and he observes that this freedom from swelling in the situation of it is a circumstance well worthy of our attention, as it

Fig. 1.

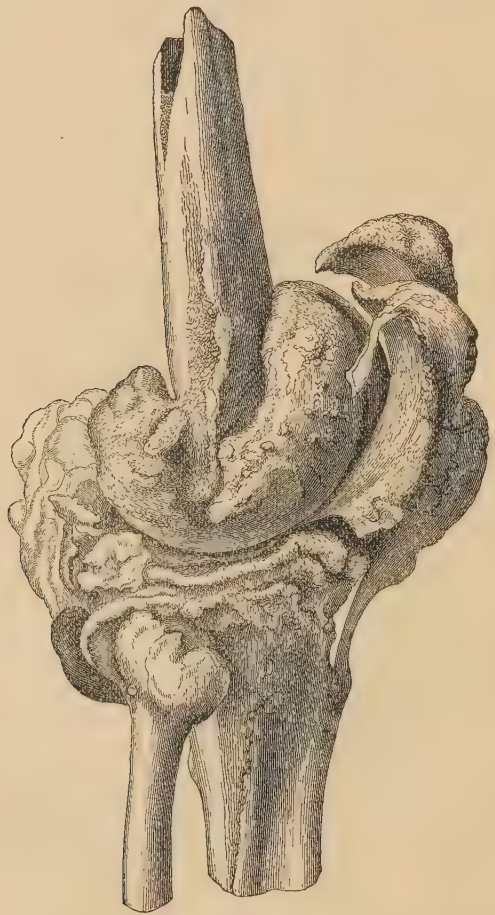
may aid our diagnosis of this disease in the living patient. There was, in this instance, no alteration in this ligament, while all the structures around it were completely changed. On opening the joint we find the

[a] See Adams on "Rheumatic Arthritis"—Atlas, Plate IX., Fig. 1—E.

synovial membrane had undergone extensive alteration. It presented the appearance of vascular processes—soft, and velvety—in short, vascular fimbriæ or fringes, so characteristic of this disease.

They might also here observe that remarkable and dilated bursa which Mr. Adams had called attention to,[a] as forming the popliteal swelling, so frequently to be found associated with the chronic synovitis of this disease. We have also to remark that only a small portion of the semi-

Fig. 2.



lunar cartilages had remained. The cartilage of incrustation had been removed, its place having been supplied by ivory-like surface.

The most striking changes were those which the osseous tissue had

[a] See page 190, T. on C. R. A.; also Atlas, Plate IX., Fig. 1—B.

undergone; and here, they had to observe, found conspicuous depositions of what Mr. Adams has named, with reference to this disease, as "additamentary bones."[a] Both condyles of the femur were greatly increased in size by exuberant growths of bone, which seemed to be heaped up in front and behind the lower extremity of the shaft of the femur, which itself seemed to have been pressed down so as to give an idea to any one unacquainted with this disease, that a fracture by impaction had occurred. (See Woodcut, Fig. 2.) As to the patella—(Fig. No. 1)—they could see its normal outline, and the mass of additamentary bone forming a circumference, presenting numerous irregular masses around. The patella itself posteriorly had been added to, and the bone hypertrophied in such a manner that it amounted fully to one inch in thickness. There was another feature in the case, that, before he concluded, he would allude to, namely, that as in the generality of cases of this disease, they found that the direction of the knee was inwards, and that the affected one approximated the other; but it was to be observed that in this case the whole limb seemed at the knee to be bowed outwards. The disease here seemed *local*—bony anchylosis had taken place between the tibia and fibula near the articulation at the knee.—*April 4th*, 1868.

Permanent Patency of the Aortic Valves—Aortitis.—Dr. Gordon exhibited a very well marked example of the condition of the heart, which was known as permanent patency of the aortic valve. The valvular apparatus was extensively diseased. It appeared as if, by the process of ulceration, one valve and a half had been removed; and this condition was evidently of very long standing. There was no appearence of any recent disease in the heart. The left ventricle exhibited the usual consequences of so great an amount of disease of the aortic valves, admitting of so much regurgitation as must here have existed. It was immensely hypertrophied and dilated.

So far, the interest of the case consisted chiefly in showing the condition of a heart, in which the valvular apparatus of the aorta had been destroyed by rheumatic disease fifteen years before; for the history of this case was, that at that period this patient had suffered from very severe rheumatic fever, when his heart was extensively diseased; and he had never since been kept from work until a few weeks ago. The abnormal state of the left ventricle, as presented, was therefore the result of fifteen years' growth, and had progressed so steadily as to allow of this patient continuing his ordinary occupation as a carpenter, with comparatively little inconvenience, up to a very recent period before his admission into hospital. He then began to complain of weakness, oppression of breathing, and palpitation. When he came into the hospital, it was

[a] See page 38, læs cetat.; also Atlas, Plate VII., Fig. 3, 66.

clear that he had permanent patency of the aortic opening to a great amount, which the hypertrophied, left ventricle, and the history of the case, showed to be of long duration. But he had now, in addition, symptoms of angina, which were considered to be due to an inflamed aorta. He had a very constant short cough, orthopnea, and an enormous amount of expectoration—the latter was not such as that found in pulmonic disease; it was serous, frothy, and largely tinged with blood, and sometimes amounted to two quarts in twenty-four hours. The man never made the least rally; but gradually became weaker, and this weakness was his great complaint.

The hypertrophied heart was perfectly able to carry on the additional work which had been *gradually* imposed on it, and for which it had time to prepare; but when further increase of labour was suddenly put upon it, it proved quite unequal to the required exertion, and rapidly failed.—*April 25th*, 1868.

Calculus removed through the Urethra from the Bladder of a Child.—Dr. Fleming exhibited a calculus which he had removed with a urethral forceps from the bladder of a little boy under two years of age. The boy was suddenly attacked with retention of urine, having suffered from painful and frequent micturition for a few days previous. When he was brought to hospital he was forcing and straining to pass water, the bladder was distended as an oblong tumour, reaching from the pubes to the umbilicus. The penis was in a state of partial erection, and the child was dragging and pulling it most violently.

Dr. Fleming at once suspected, from the peculiar character of the symptoms, that there was a calculus impacted in the neck of the bladder or in the urethra, and having ascertained its position when relieving the retention of the urine with a silver catheter, he quickly dilated the urethra, and in the interim provided himself with a special forceps for the purpose, and was fortunate enough to catch the calculus as he now presents it to the Society, secured within the blades of the forceps. He remarked upon the importance of the diagnosis of such class of cases, and upon the paramount value of the early detection of a calculus of a size removable by so simple and efficient an operative expedient. He had removed, in many instances, calculi from different portions of the urethra of children, but in none did he remember a case where a calculus caught *within the bladder* was so satisfactorily or with so much facility removed. Though by no means favourable to the operation of lithotrity in children, he had yet provided himself with a plain-bladed lithotrite of Charrière which he purposed using had he failed with the forceps in the case under observation. Dr. Fleming exhibited the catheter and the forceps he was in the habit of using in such cases, as he attached some importance to their peculiar forms.

The calculus removed was small, was somewhat larger than a duck shot, was slightly roughened on its surface, and consisted wholly of lithic acid. It was obviously renal in its origin, and from the accompanying characteristic symptoms it tended to confirm the opinion inculcated by Dr. Fleming in his clinical records of injuries and diseases of the urinary organs, that many, very many of the abdominal sufferings so common in infantile and in child-life, are attributable to the unobserved escape of calculous concretion from the kidneys. Dr. Fleming stated that he has found in the kidney of the fetus in utero, and in not a few instances in that of the infant and of the child, small gritty particles consisting of the oxadate of lime or of lithic acid crystal impacted in the tubercular structure. He directed special attention to the remarkable dilatability of the urethra at this early period of life, as being of much practical moment.—*July*, 1868.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE KING AND QUEEN'S COLLEGE OF PHYSICIANS.

On an Epidemic of Malignant Measles at Sydney, N.S.W. By Walter J. Carroll, L.R.S.C.I.—I have observed from the medical papers that much controversy is occurring in Dublin relative to a late epidemic which some have called purpuric fever, while others prefer the name of febris nigra. I am, as you may be aware, in large practice here, and having observed a great analogy between the febris nigra of Dublin, and a form of malignant measles very common here lately, I think it right to record the circumstance.

In the first five months of the present year there raged in Sydney the severest and most general epidemic of measles which it has ever known. It commenced so mildly, that of the first 250 cases which I treated none died. Unfortunately, I soon met with a malignant form of the disease. In this the eruption was always darker than it ought to be, sometimes purple or chocolate, and persistent, for often eight or ten days, if the patient lived that time. In some cases of greater malignity only a few dark spots, sometimes so few indeed as to escape notice, appeared on the face or thorax, while on the extremities three or four vesicles would form, which would appear in the morning, perhaps no larger than a flea-bite, and at noon would be so extended as to involve a surface equal to the disc of a stethoscope, at which size they would usually break, exposing a black or chocolate surface, gangrenous to the sight and smell. This, if the patient still existed, would spread so as to lay bare and raw in twenty-four hours, almost the entire surface of the body. In all forms the tendency to convulsions was most remarkable. By them the attack was often first ushered in, and almost every case

which died terminated by them. Some cases, which undoubtedly gave evidence of ventricular effusion and spinal lesions, were remarkable for the duration of life, when complete paralysis of all voluntary muscles, and inability to eat or drink, existed. The patient, perfectly and hopelessly comatose, has subsisted, to my own knowledge, ten and twelve days upon nutritive enemata. It is worthy of remark, that no practitioner doubted the cases I mentioned being measles. We all had them more or less. My practice being more among the middle and working classes, and very much among the clubs, I believe I saw and treated more cases than any other person in Sydney. I compute the number at 900, and my loss at six per cent.

This epidemic did not conform in its course to the law to which epidemics are supposed to be subject. It came mildly, and gradually became general and severer till the very bad cases were numerous, which prevailed to the end.

An aphthous condition of the mouth, and, I believe, likewise of the intestinal canal, was present in many cases. I have heard of cases so bad, chiefly in the benevolent institutions of the city, that gangrene of the cheeks and complete sloughing of them occurred. Some of our practitioners called this complication cancrum oris, while others preferred the newer one of stomatitis. All considered it a consequence of the morbid poison of the measles, and low vitality resulting therefrom. Besides the most marked tendency of this epidemic to induce cerebral and spinal complications, another much more general, but in proportion not quite so fatal, existed. Almost every case presented more or less intestinal irritation. Dysentery and diarrhea were very prevalent, and often most intractable. Inflammation, simply of the large intestine, often demanded attention when all other symptoms were light. From the foregoing you will see that our disease was extremely prostrating, and of, very frequently, a putrid character.

Reports give a most startling account of the mortality in the public institutions. It has ranged from 6 to 12 per cent.

The following is an extract from the report of the medical officers of the Benevolent Asylum:—

"During the epidemic of measles (March—May, 1897) there were about 290 children and infants in the Benevolent Asylum; all the above were attacked. There were 38 deaths, of these 27 occurred in the case of foundling children and infants under three years of age. Of the healthy children only 11 died. It is to be remembered that the majority of children received into the Benevolent Asylum are far below par as regards every matter of health; they are the offspring of the dissolute and the diseased.

"The character of the epidemic amongst the children was extremely malignant. Many of the children and infants died within twelve hours

of the first appearance of the rash, and quite comatose. Others within a shorter period died convulsed. The majority had putrid sores of throat and mouth, and died within a week of their first seizure."

I consider this report in the main reliable. I consider, however, that many cases of convulsions, preceding the appearance of the rash, were registered to the credit of the convulsions; whereas the likelihood was they were due to the latent measles. This remark I do not make in disparagement of the quotation I have given you, but on the probability of some errors in the Registrar-General's Report for the past year, which is not yet at hand. I know we had all a wish to keep our percentage of deaths very low; and some persons, I believe, went to a greater length, when, through accidental circumstances, the rate became high, by certifying to the complication and not to the general disease; thus they reduced the ratio.

My treatment was in all cases most stimulating. When the disease was severe quinine and turpentine were freely given. Where irritation of the intestinal canal was present I gave, night and morning, ½ gr. of calomel, besides every two hours alternately I gave two or three minims of Spt. Terebinth., and an astringent, antacid mixture containing Tinct. opii. and Trisnit. Bismuthi. Of the many modes I tried I found this the best. The calomel acted gently on the liver, and improved the secretions. Brandy, port wine, isinglass, and beef-tea, where permissible, were freely given.

Some persons here used largely the bisulphites of soda. I cannot, however, speak freely of them, as my experience was limited to two fatal cases. Many do, however, praise them highly here. I have administered pot. chloras; it was of service, but not equal to the turpentine. I sometimes thought that it had provoked that severe irritation of the bowels which sometimes caused diarrhea, and sometimes dysentery, and was always hard to manage. To the rectified Spt. of turpentine, given in an emulsion with or without quinine in solution, my most marked recommendation is given. It surpasses all other stimulants, being the most rapidly diffused, and maintains the circulation in the engorged capillaries of the lungs, the integument, or the extremities. Under its use I have seen respiration improved, the eruption grow brighter, and the circulation increased, heat being generated. It is, therefore, indirectly, if not directly, an oxygenizer of the blood. The dose which I have named above is a medium one for a child one and a half year old.

The Registrar-General's Report on the vital statistics of Sydney and suburbs during the months of February, March, April, May, June, and July, 1867, show a gross mortality of 645 from measles during these six months.

The monthly tables were as follows, viz. :—

February	15	Deaths
March	147	„
April	266	„
May	149	„
June	56	„
July	12	„
Total	645	

Some Cases of Aphasia, communicated by DR. ŒDMANSSON. Translated from the *Hygiea* for June, 1868, by WILLIAM DANIEL MOORE, M.D., Dub. et Cantab.; M.R.I.A., L.K.Q.C.P.I.; Honorary Fellow of the Swedish Society of Physicians, of the Norwegian Medical Society, and of the Royal Medical Society of Copenhagen; Secretary for Sweden, Norway, and Denmark, to the Epidemiological Society of London.

THE disease, or rather the morbid symptom, which has for some years borne the name Aphemia or Aphasia, was not unknown in ancient times. Trousseau quotes a passage from Pliny,[a] where the latter, after having given some examples of unusual memory, states that the memory may easily be affected by various causes, and quotes some instances in which persons have forgotten the names of their acquaintances, and even their own names, or the letters of the alphabet. Dax and, after him, many others, reproduce the following remark of Schenkius,[b] where the latter makes a certain Oethæus say: "Observatum a me est, plurimos post apoplexiam aut lethargum aut similes magnos capitis morbos, etiam non præsente linguæ paralysi, loqui non posse, quod, memoria facultate exstincta, verba proferenda non succurrant."

Frederic Hoffmann[c] describes, under the name of aphonia, five cases which afford more or less distinct examples of aphasia. He defines aphonia to be an incapacity to speak or to produce articulate sounds, depending exclusively on a defect in the tongue, the cause of the latter being a lesion of innervation. That he does not mean an absolute loss of the power of articulation is shown by this, that one of his patients could the whole time say "mama." He distinguishes also certain forms of aphonia "ex vera linguæ paralysi," from others, but does not go farther into the matter. As the most usual form of aphonia he specifies that which attends apoplexy and hemiplegia, and which not unfrequently

[a] Historia mundi, Lib. sept., cap. xxiv.
[b] Obs. med. rar. Lugduni 1643, p. 180.
[c] Opera omnia. Tom. 3, pp. 249, et seq. Geneva, 1740.

may continue for some time afterwards. Among other causes he enumerates congestion of the head, the abuse of spirits, violent terror, cold, intestinal worms, all causes which, with the exception of the last, have been brought forward for aphasia.

The matter is, however, put much more clearly by van Swieten,[a] who expresses himself thus: Vidi plures, qui ab apoplexia curati omnibus functionibus cerebri recte valebant, nisi quod deesset hoc unicum, quod non possent vera rebus designandis vocabula invenire; manibus, pedibus, totius corporis nixu conabantur explicare miseri, quid vellent, nec poterant tamen. Malum illud per plures annos sæpe insanabile perstat. After adding, that subsequently to an apoplexy a loss of moral courage, a degree of effeminacy often occurs, he continues: Hinc videtur patere, singulares quasdam encephali functiones manere turbatas, vel et abolitas, tota vita, quia in solo principio primæ determinationis mentis in corpus quid mutatum fuit per apoplexiam prægressam. When van Swieten thus says, that some of the cerebral functions, and among them the power of speech, may be lost, while the rest remain undisturbed, he approaches the views of a later period, and is to be considered as a precursor in phrenology. The definition of aphasia, which may be deduced from the above statement, agrees most closely with that afterward given by Broca.

It was not until the entrance of phrenology upon the medical stage that the question of aphasia could assume the form in which it now appears. Gall referred the organ of the faculty of speech, which he calls "Memoire des mots," and which he would have separated from the "Facultè du Langage, Talent de la Philologie," to the antero-inferior part of the frontal lobes. Both he and Spurzheim[b] describe typical cases of aphasia, but had no opportunity of establishing by dissection the existence of any change in the central organ assumed by them. The phrenologists based their theory of the localization in the brain of the several intellectual and moral qualities principally on facts in comparative anatomy and cranioscopical observations, while they did not understand how sufficiently to estimate, or at least how to employ the control over the correctness of their views, which pathological anatomy could afford. Modern phrenology, if we may so call the recent attempts to divide the brain into many centres, arose properly precisely from the observation, that the loss of a higher faculty, the power of speech, coincided with lesion of a certain part within the brain, and recent investigations are directed to confirm or refute this observation. The question is still in its infancy, but once started it can never be left undecided. It is remarkable that the starting point of the more recent investigations is the same as that of Gall's. Even at school he began to study in his comrades their memory for words, compared with the form of their heads.

[a] Commentar. Tom. 3, p. 288.

[b] Observat. sur la Phrenologie. Paris, 1868, pp. 304, et seq.

In passing to the most recent period in the history of aphasia we meet with Bouillaud, who as a principle assumes unconditionally the plurality of cerebral organs, but says[a] that the only thing which his own investigations have taught him with respect to the localization of the intellectual organs of the brain, or the determination of the seat of these organs, is that the anterior cerebral lobes are the organs for the formation and memory of words, *i.e.*, the principal signs for the expression of our thoughts. To this conclusion he has been led by the observation, that loss of the power of speech and of the memory of words is always a result of a disorganization in the anterior cerebral lobes, and that this power may remain undisturbed in considerable changes in other parts of the brain. But loss of the power of speech may depend also on paralysis of the muscles which serve for the articulation of words, and in such cases he has also found an alteration in the anterior cerebral lobes. Now as he assumes the existence of distinct organs in the brain for a number of combined movements governed by the brain and the will—which he has inferred from the fact, that some of these movements may be found paralysed with a corresponding limited lesion in the brain—he asserts that the organ which governs the articulation in speech, and combines the muscular movements set in motion in speaking, has its seat in the anterior lobes in intimate connexion with the organ for the memory of words.

This centre he calls "organe co-ordinateur ou legislateur de la parole." The loss of the power of speech may, therefore, according to Bouillaud, depend either on loss of the memory of words or of the "legislative power." The place in the brain, which this double organ of the faculty of speech occupies, he did not, in his first essays on the subject, wish to indicate more precisely than in the anterior lobes, but in other places he says the anterior parts of these lobes.

Marc Dax[b] bases upon more than forty cases the assertion, that loss of memory of words occurs while intelligence is preserved and without paralysis of the tongue, and that the same is always combined with a lesion in the left hemisphere of the brain. To this latter conclusion he was led by observing that the hemiplegia so often occurring with loss of speech is always dextral. He explains the phenomenon itself with Lordat, by assuming an aberration of co-ordination between the muscles used in speaking. He likewise points out the interest the fact possesses in a medico-legal aspect, as patients so affected might easily be looked upon as insane. This is true principally of the form of aphasia, in which the patient can indeed speak, but uses words incorrectly and incoherently.

This paper at the time attracted no further attention, and quickly

[a] Traité de l'encéphalite. Paris, 1825, p. 284.

[b] Lesions de la moitié gauche de l'encephale coïncidant avec l'oubli des signes de la pensée. Montpellier, 1836. Gazette Hebdom. 1865, No. 17.

lapsed into oblivion, from which a son of Dax, after the appearance of Broca's essay, brought it forward.

With the exception of some papers sent in by Bouillaud in 1839 and 1848 to the Medical Academy, in which he endeavoured with fresh cases to support his opinion, the question rested almost completely until 1861, when an animated discussion arose on the subject in the Societé d'Anthropologie, in which Auburtin in particular defended Bouillaud's proposition, while Gratiolet contended for the unity of the brain.

Broca, who had previously questioned the theory[a] of the plurality of organs in the brain, went over in 1861, with a certain *eclat*, to the other camp, on account of two cases of aphasia which he witnessed immediately after one another. He goes still further than Bouillaud and Dax, asserting that aphasia is always connected with a lesion of the posterior third of the third (inferior, external) frontal convolution. In both cases the greatest change was found in the posterior part of the third frontal convolution, while in one almost the whole frontal lobe, the gyrus ascendens parietalis, the insula Reilii, &c., was more or less degenerated, in the other also the second (middle) gyrus frontalis was, although in a less degree, affected. Both were the typical cases where loss of the faculty of speech was met with without paralysis of the muscles of articulation, and at least for a long time without disturbance of intelligence. Broca considers this "symptom" to be so peculiar, that it deserves a special name, and he proposes for it the designation "aphemia." The patient both understands what is said to him, and can himself express his thoughts in writing; he has not lost the memory of words, nor the power of moving the muscles employed in phonation and articulation. To explain the nature of the aphemia he proposes two hypotheses. The one is that the patient has lost the memory of the combined movements necessary for the production of articulate sounds, and is therefore reduced to the condition of the child, who may have both the intelligence and the will, without the power of expressing its thought in words. The other hypothesis is to the effect that the aphemia is the result of an "ataxie locomotrice," limited to the part of the central nervous apparatus which governs the movements in the articulation of sound.

After Broca came forward the interest in the subject became extremely general in France. A very large number of cases were speedily published. The principal writer is Trousseau, who in his "Clinique Médicale" gives a full account of aphasia,[b] and brings forward many observations of his own. He assigns to aphasia a much more extensive signification than Broca did. While Broca defined it as a loss of the power of speech without disturbance of intelligence or of the motor apparatus, Trousseau says that such cases are indeed met with, but only exceptionally. As a

[a] Bulletins de la Societé anatomique, August, 1861.

[b] Trousseau, for etymological reasons, changed the name aphemia to aphasia.

rule other modes of manifestation of thought are also wanting, especially the power of writing, and this usually in proportion to the defect in the faculty of speech, wherewith he assumes that the intelligence is in a greater or less degree diminished. We are not, he thinks, to allow ourselves to be misled by the patient's intelligent aspect, but we should always accurately investigate the condition of his mental powers. The principal cause of aphasia he places in a defective memory. He does not wish, however, completely to identify aphasia and amnesia, but entertains the view, that we must admit the existence of various kinds of memory, and that it is the memory of words and other means of expressing thought which is impaired, without the memory having in other respects necessarily suffered any damage. The cases of aphasia in which the mental powers are undisturbed, he explains, like Broca, by supposing that the memory of the combined movements in speech is lost. A patient so affected is, he says, in the same position as the deaf mute would be if he were suddenly to regain his hearing and endeavour to imitate the conversation around him.

G. Dax, in 1863, sent in to the French Academy of Medicine an essay,[a] in which he both referred to his father's work, and brought forward several cases in support of the view, that the faculty of speech has its seat in the left hemisphere, and according to his opinion probably in the middle lobe (its anterior,[b] external part). This paper gave rise to an animated discussion, in which the chief speakers were Trousseau, Bouillaud, Parchappe, and Baillarger. Trousseau repeated his formerly announced opinion, that all means of the expression of thought (speech, writing, gesture, singing, &c.) might in aphasia be more or less lost, and that in general a lesion of intelligence is present principally in the form of defective attention and dulness of memory. He brought forward statistics of known cases, by which he endeavoured to show, that both Bouillaud's and Broca's assumption of the localization of the faculty of speech in the anterior cerebral lobes wanted sufficient foundation, and he concluded by designating aphasia as a mere symptom, which almost always, if not constantly, depends on a lesion of various intellectual powers, while he thought that different parts of the brain co-operated in speech, even if the anterior lobes play the principal part in it. Bouillaud disputed the correctness of Trousseau's statistical calculations, as well as his entire theory of aphasia. He took up Broca's stand-point and recognized only such cases as aphemia or aphasia, where no lesions of intelligence or of the muscles of articulation were met with. With this form of aphasia, "Broca's aphemia," "aphemie exterieur," which according to B. depends on a change in the "organe legislateur de la parole," and the loss thence produced of the power of combining the muscular movements, he would yet always

[a] Gaz. Hebd. 1865, No. 17.

[b] Bulletin de l'Académié imp. de Med. 1865. Nos. 14–19.

have recognized his second form "aphemie interieur," which has its sole foundation in loss of memory.

Baillarger endeavours to define more accurately the several forms of aphasia and their causes. "Aphasia simple," where a more or less complete loss of the faculty of speech occurs, ought to be distinguished from the form in which the patient utters words without connexion with his thoughts. In it there is a perversion of the faculty of articulate language. Simple aphasia has two forms—1st, Where both the oral and written language have suffered; and 2nd, where only the faculty of speech is more or less lost. The former depends simply upon a loss of memory. Not so the latter. In this, he says, the memory cannot have suffered, as the power of expressing the patient's thoughts in writing is unchanged. Nor is there any lesion of a co-ordinating organ, as many can very well articulate certain, though often only a few words. Baillarger dwells on the well-known fact, that some of those affected with aphasia cannot find a word which they wish to express, while the same word often escapes them involuntarily a little later instead of another. He considers that this depends on an inability in the will to incite to the necessary muscular movements. "Incitation verbale volontaire" has been lost, while "incitation verbale involontaire" continues. As a proof of the existence of such involuntary incitation to speak—speech without voluntary determination—he adduces speech during sleep, as well as the fact, that men often speak to themselves without knowing it. The form of aphasia where one word is used for another without connexion, he would explain by a substitution of automatic, involuntary speech for that regulated by the will.

Jaccoud[a] revives the old name alalia, and by it designates every loss of the power of speech without reference to whether the cause of it is a defect of intelligence, a defect in the conducting apparatus from the brain, in the motor centre of speech (the medulla oblongata), or in the muscles of speech. By this jumbling together the question is thrown back into the obscurity from which Bouillaud, Broca, &c., endeavoured to rescue it.

Fleury has endeavoured to introduce special denominations according to the various causes of loss of the power of speech. To these belong aphthongia, or alalia, for the form which depends on diminished mobility of the tongue; aphrasia, where the cause is to be found in abolition of the faculty of thought; and aphasia, for the form which at present occupies us.[b]

[a] Gazette Hebdom. 1864. July and August.

[b] In the 40th volume of this Journal, p. 254, I have myself briefly recorded a case of aphasia in which the patient formed correct sentences, though not a word he uttered expressed the idea he meant to convey. In this instance the powers of co-ordination and of articulation were perfect; the intelligence also was, to all appearances, perfect,

In England the subject has latterly been followed up with interest. Hughlings Jackson (London Hospital Reports, 1864) gives an account of forty cases, in all of which, with one exception, the hemiplegia was dextral. The first case with *post mortem* examination, and confirming Broca's views, was brought forward by Sanders.[a] In a recent case by the same author the greatest change was found in the insula Reilii, which led him to express the opinion, that possibly the *insula Reilii* rather than the *gyrus frontalis tertius* is the point on whose integrity the power of speech depends. Sanders assumes, with Bouillaud, two forms of aphasia—amnemonic and ataxic; but believes, nevertheless, that in aphasia a certain degree of defect of memory is always met with. Fresh cases have been published by Fox, Jackson, Simpson, Ogle[b] (St. George's Hospital Reports, 1867), &c. Ogle describes no less than twenty-five cases, in all of which the left cerebral hemisphere was altered. He considers that cases of aphasia, depending on a change in the right hemisphere, may be explained by the assumption, that a corresponding point in the right hemisphere had been developed into an organ of speech in the same manner as we occasionally see the left hand developed to perform the functions of the right.

[It is to be regretted, that in the above bibliographical and historical sketch the author has altogether overlooked the many very valuable communications on the subject of his paper, which have from time to time appeared, in the former and present series of this Journal, from the pens of Dr. Osborne (so long since as November, 1833), Dr. Graves, Dr. Banks (May, 1865), and Dr. Popham (August, 1867).—Translator.]

From the foregoing short account of the historical development of the subject of aphasia, it is easily seen that opinions are divided respecting almost everything belonging to it. It is remarkable that the idea of the brain as a complex of many centres, distinct from each other, has been disputed by only a few among the many who have recently stated their views respecting it, though it must at the same time be admitted that many have avoided giving any definite judgment in the matter, and that the degree of independence assigned to these centres has varied. All who admit the possibility of the existence of a distinct organ for the faculty of speech, or that the loss of the latter coincides with lesion of a limited point in the brain, must, however, be regarded as also recognizing the truth of phrenology in other respects, though not precisely Gall's phrenology, with its external craniological signs of the cerebral organs;

except that the patient had forgotten the proper connexion between his ideas and the words he ought to have used to express them. Such a case would be more adequately represented by the term *heterophasia* than by *aphasia*.—W. D. M.

[a] Edinburgh Medical Journal, 1866. February.

[b] Unfortunately, I have not seen the original, but only a short notice in the American Medical Journal for January, 1868.

but a phrenology based upon the theory of the various physiological action of the different parts of the brain, especially of the cerebral convolutions.

Among those who do not absolutely deny an organic plurality in the brain is Trousseau, who, however, thinks that the investigations hitherto made do not justify such an assumption. He argues, nevertheless, though not successfully, in favour of the possibility of a different action in the two hemispheres of the cerebrum by endeavouring to bring forward proofs of pathological and anatomical differences between the two sides of the body. Thus he would maintain that intercostal neuralgia, as well as hysterical hemiplegia, scarcely ever occurs except on the left side, and asserts, with Bouillaud, that the rheumatic affection of the heart is met with only in the left side of that organ. Further, he directs attention to the different mode of origin of the two common carotids.

Again, of the authors who demand a distinct organ for the faculty of speech, this is referred by the first to one, by another to a different part of the brain. Thus Gall and Bouillaud would place it in the anterior part of the frontal lobes; Dax, senior, in the left hemisphere; Dax, junior, in the middle left lobe; Broca, in the posterior part of the third frontal convolution; Sanders, in the left *insula Reilii*. Although opinions are divided, most writers, as we have seen, and all of those who have of late accurately studied the subject, agree in looking on the left hemisphere as the seat of that organ. Many cases collected of late years, both in France and England, are in favour of the point first indicated by Broca, but against this are other perfectly reliable observations, and among them one by Charcot, where Broca himself made the dissection, and found the third frontal convolution sound. In this, as in other instances, the change was met with in the insula, which, on the other hand, is often not mentioned in *post mortem* reports as diseased.

A support for the correctness of the assumption, that the organ for speech, if such exists, is placed in the left hemisphere, lies in the fact, that the hemiplegia, which often occurs in aphasia, is almost always dextral. There are, however, authentic cases where the hemiplegia was left-sided. An attempt has been made to explain this by showing that, simultaneously with the lesion in the third frontal convolution, which produced the aphasia, another is found in the right hemisphere, giving rise to the sinistral hemiplegia. This explanation passes as satisfactory so long as in such cases no *post mortem* examination has been made, and its incorrectness proved. Ogle supposes that in these cases the aphasia depends on a change in the pons Varolii.

The physiological explanations given of the nature of aphasia also vary greatly. Gall considers that the loss of the faculty of speech

depends on a loss of the memory of words. Bouillaud joins him for one form of aphasia, while he makes his second form depend on abolition or diminution of activity in his "organe legislateur de la parole"—*i.e.*, on destruction, through lesion of this organ, of the combination of the muscular movements necessary for speech. It is this latter form which the question at present bears upon. No one denies that a defect in the memory produces a corresponding limitation of the power of expression; but this defect, of a purely intellectual nature, ought not to be designated by the name aphasia, for this might easily give rise to confusion capable of injuriously affecting the development of the question. One reason, however, for giving the name aphasia also to this loss of the faculty of speech is, that we, unfortunately, cannot always distinguish this form from the other; but of this more hereafter. Lordat and Dax, senior, entertain an opinion similar to that of Bouillaud, as they consider that aphasia depends upon defective co-operation of the muscles of articulation, though at least Lordat does not think of any distinct centre in the brain as regulating and co-ordinating their movements. Broca looks upon this opinion of Bouillaud as possibly correct, but believes rather that the aphasia depends on loss of a special memory assumed by him—viz., the memory of the combined movements which are in operation in speaking. Nevertheless, the existence of such a memory is at least doubtful. Of those who hold the unity of the brain, Trousseau considers aphasia in general as an intellectual disturbance, but admits the existence of cases where the intelligence is undisturbed: for these he adopts Broca's last-mentioned hypothesis. Baillarger refers the cause of the affection to a loss of the power of the will to determine to speech, a loss of "incitation verbale volontaire."

Among these different opinions, it would appear that Bouillaud's view—that aphasia depends on a disturbance of combination of the muscular movements, which is about the same as Lordat's ("asynergie verbale"), and which Broca looks upon as in the end correct—reckons the most adherents, though all of these do not accept the cause of this disturbance assumed by Bouillaud—lesion of his "organe co-ordinateur." If this opinion be correct, Broca will have aphasia looked upon as an "ataxie locomotrice," which view has obtained acceptance in England, where Sanders and Ogle designate this form of aphasia as aphasia atactica; that, on the other hand, where the memory has suffered, aphasia amnemonica. It is remarked, in opposition to Bouillaud, that the co-ordination of the movements of the muscles of speech cannot be said to be removed, as many aphasics can articulate one or more words very well. The objection may, however, here be made, that in ataxie locomotrice many degrees are met with, and that even in the graver forms certain muscular groups can co-operate and combined movements take place, though not always, when the patient wishes, and often only for a

moment. Broca's assumption, that aphasia depends upon a loss of memory of the movements of speech, is rejected by Baillarger, who believes that there is nothing to justify the assumption of this special memory. "Children endeavour to imitate and reproduce the sounds they hear spoken." "They try to exercise their muscles in combined movements rather than to acquire the memory of these movements." "The will can produce speech, but does not guide the several movements, which seem to be rather of a reflex nature."

As to the clinical signification to be attached to the name aphasia, writers have not been able to agree. Broca and Trousseau, the two principal authors, entertain, as has already been shown, far different views. Broca and his adherents will recognize as aphemia or aphasia only those cases where, with existing loss or limitation of the faculty of speech, no change is discoverable in the intelligence and motor apparatus. Trousseau indeed admits the exceptional existence of such cases, but will have aphasia, as a rule, looked upon as an intellectual disturbance, usually combined with other defects of the same nature, and often with other signs of cerebral lesion, as hemiplegia, contractions, eclampsia, &c. Both these views seem to me to be one-sided and unsatisfactory.

If we investigate a large number of cases we cannot avoid seeing the difficulty, nay, often the impossibility, of distinguishing cases of aphasia in a limited sense from those where actually a slight defect of intelligence—for example, a certain degree of dulness of memory—exists. When it is necessary to resort to the experiment of making the patient write, in order to study the degree of his intelligence, we need only remember how many, particularly old men of the lower classes, there are who are not able, or are only very imperfectly able, to write, and who easily forget what they could do in that way; and moreover, that the hemiplegia so often present frustrates the attempt; to see that this experiment is often made in vain. It must, therefore, no doubt, frequently happen that we cannot with certainty decide whether the case ought to be referred to pure aphasia or not. This will be still more true if we adopt Ogle's opinion, that the loss of the power of writing (agraphia) ought, as well as aphasia, to be distinguished into a. atactica and a. amnemonica.

If we adhere to the strict definition it may easily happen that we may in the same case at different times have an aphasia à la Trousseau and an aphemia à la Broca, nay, even an alalia à la Jaccoud. Suppose, for example, an apoplectic, who has regained intelligence but is still dull, has paralysis of the tongue and cannot speak, we have a case of alalia. After some time the tongue and the other muscles engaged in speech have entirely, or for the most part, regained the power of movement, but some dulness of memory, with inability to speak, continues; we have

now before us one of Trousseau's aphasics. The dulness gradually diminishes, the memory returns, but the speech is persistently imperfect. The case is now reduced to an aphasia in a limited sense—a Broca's aphemia. It seems incorrect to assert that aphasia exists only in the last case. It existed also in the second, though not alone, but combined with other symptoms of an originally more extensive cerebral lesion. In the first case we cannot, on the contrary, speak of an aphasia, for to it is necessary, on the one hand, sufficient intelligence to be able to think, and, on the other, sufficient mobility in the muscles of speech for the articulation of sound.

In my opinion we ought to be entitled to diagnose aphasia whenever the faculty of speech is more or less lost, and when this loss cannot be explained by dulness existing in the thinking power, or paralysis in the vocal muscles. We endeavour to recognize it, where it is met with, whether it be that the defective power of speech is the only symptom of a pathological change in the brain, or that it exists together with other symptoms of cerebral disease; in the latter case the same organic change may be the cause of the aphasia as in the former instance, although the lesion has also attacked other parts of the brain.

Aphasia is for us, however, only a symptom like certain neuralgias and paralyses of central origin, which, in one instance, at least for some time, may be the only sign of the central affection, in another, may be a link in a wider group of symptoms. This symptom deserves, however, when it stands alone, more than indeed to give a name to the disease, especially when we consider that the pathological process in the central organ may be of a different nature, as softening with or without a change in the vessels, hemorrhages from various causes, the pressure of tumours, encephalitis, &c., &c., and that the differential diagnosis may often be impossible.

With respect to Trousseau, it may be remarked that he endeavours to throw into the shade and to reason away the cases of aphasia, where loss of the thinking power stands entirely alone, although he must admit that such cases are met with. His view of both the physiological and clinical signification of aphasia he bases only on complicated cases, where, with loss of the faculty of speech, some intellectual defect or other is met with.

For the study of the physiology of the brain the pure cases of aphasia are incomparably the most important, but even the complicated cases are capable of affording information, as on *post mortem* examination we may find the same explanation of the symptom as in the simple cases. They teach us, moreover, to study this symptom in its relation to other symptoms of cerebral disease, and in general to investigate more accurately than hitherto the several symptoms.

I.— *Case of Epilepsy, with transient Aphasia after the attacks.*—Johansson,

a guard, was admitted into the Garrison Hospital in Stockholm, on the 16th December, 1863.

He had shortly before got a violent blow on the head, which deprived him of consciousness. In the journal from this time it is noted that he had a slight wound on the back part of the vertex, without any exposure of the bone or depression of the skull. He was quite confused, could not answer questions, nor even articulate any sound. No paralysis could be discovered, but the patient, on the contrary, moved with much violence, especially when his wound was dressed, whereupon he uttered a moaning cry of pain. Ice to the head. Enema aperiens. On the 18th he began to endeavour to answer, but his speech was still extremely confused and unintelligible. On the 20th he could enunciate short sentences clearly but slowly; in general he still lay in a lethargic condition. Blister to the nape of the neck. In the beginning of January it was observed that he had lost the power of reading. If a book were placed in his hand he could distinctly read a few words, but he then began to skip over some, and to introduce others quite foreign to the purpose, so that the whole was entirely unintelligible. His speech was at the same time imperfect, when he had to utter long sentences. These defects were gradually removed. Before the 28th February it was found that he was quite coherent, but rather sensitive and childish in his mind. On the 29th January he had an epileptiform attack, which was repeated a couple of times during the spring. Later in the season he was dismissed. During the first part of his stay in the hospital he was under the care of Dr. Edholm, subsequently of Dr. Lundberger.

After his return home he was for a short time free from attacks, but they soon came on again, and became gradually more frequent. His spirits were bad. In the beginning of 1865 he gave up the service. On the 9th of April he was re-admitted into hospital, having had ten or twelve fits during the preceding twenty-four hours. On his admission he was ordered a bladder of ice to the head and a turpentine enema. On the 10th the note of his case was—"Seven epileptiform fits since yesterday afternoon; a small cicatrix on the posterior part of the vertex, at the right of, and close to the mesial line." The patient lies in an apathetic and stupid state. He answers slowly "Yes" and "No," but on attempting to utter a long sentence, what he says is, with the exception of a word or two, quite unintelligible. On asking him if he feels any pain, he points to the left part of the forehead. The pupils are normal and movable. The pulse is about 100, of moderate fulness and strength. No fever. Bowels moved after the enema. Urine passed in the bed. Nothing else remarkable. Glauber's salt in cooling doses. On the 12th blister to the nape of the neck. His state continued the same until the 18th. He had four or five fits in the twenty-four hours, was in general dull and apathetic, but sometimes violent. In his rational moments he

complained of pain in the left side of the forehead. His speech continued scarcely intelligible, yet usually more so than on his admission. On the 18th the attacks began to occur only at night. He was now more wakeful, and spoke better, although thickly. On the 28th he had been for nine days free from attacks; was quite rational; spoke in general distinctly, though slowly—sometimes skipped over a word or uttered it indistinctly. During the night before the 29th he had at least 20 fits; in the morning was quite dull and stupid, and did not answer. In the afternoon of the 30th he began to regain consciousness. The power of speech was now at first completely removed, but gradually returned. His state continued in this manner alternately improving and getting worse, the power of speech on each occasion, when numerous attacks occurred in a short time, being completely lost, but gradually returning. The blister to the nape of the neck was repeated. The bowels were kept moderately open by means of Glauber's salt. For some time iodide of potassium was employed, though without effect. On the 28th of May I noted—"During the night numerous slight attacks occurred three or four times in the hour, characterized merely by twitchings in the head, distortion of the face, and fixing of the eyes. They lasted only a minute or two. The patient endeavoured to speak immediately after they were over. He himself says he retained consciousness during the attack. To-day at the morning visit he seemed lively and wakeful. He can only imperfectly articulate sounds. At one time a word passes his lips, at another he cannot, notwithstanding all efforts, utter the same word. A word or two he can often utter distinctly, but when he continues to speak he becomes entirely unintelligible. He is conscious of his incapacity. After he has in vain endeavoured to express his thoughts orally he shakes his head discontentedly and sadly, and endeavours to say "I cannot speak," in which he sometimes succeeds, although stammeringly and with difficulty. Sometimes he can utter only the first word. When asked if he means this or that, he makes an affirmative or a negative sign with his head. Objects shown to him he endeavours, though usually in vain, to name, and he knows their use well. He understands what he reads, and endeavours some time afterwards, when requested, to utter the words he has read. During all this he never employs words incorrectly. His writing is as bad as his speaking. He attempts to form letters, but soon throws away the pen. He can with ease protrude his tongue straight forward, but its pointing and other movements are rather slow and uncertain. There is no other trace of paralysis.

The attacks continued all day; in the afternoon the patient was particularly dull; the power of speech was entirely lost. The right arm was semiflexed, the right leg was extended; both were motionless, and maintained the position given to them. The left extremities moved easily. Even the following day the paresis had passed away. On the 30th, as

the attacks continued and were numerous, six leeches were ordered to the left temporal region.

31st.—Only one fit yesterday; several during the night. June 5th.—No attack for five days. The patient is quite coherent. The power of speech is restored, except that there is a slight hesitation. 9th.—One or two slight attacks during the last twenty-four hours. 10th.—Incessant attacks during the night, of various strength, though they were generally slight; these still continue to-day, and recur once in about every five minutes. His speech is extremely indistinct. Most words he cannot utter, though his gestures and bearing clearly indicate that he knows what he wishes to say. What he means is often plain from one or two syllables in conjunction with a gesture. Six leeches to the left temple, the bleeding to be encouraged as much as possible. Same day in the afternoon: Constant numerous slight attacks. Power of speech quite lost. All attempts fail. When he attempts to speak, movements of mastication and deglutition come on instead. The tongue can be protruded and moved quite easily and powerfully from side to side.

The attacks continued during the following days, and the patient became duller and duller. On the 12th the evacuations were involuntary. On the same day it was observed that the right naso-labial fold was obliterated, and that the right angle of the mouth was rather pendulous, but the tongue was movable. On the afternoon of the 15th six cupping glasses with scarification were ordered to the nape of the neck. From this time he had in general only one attack in the hour until four o'clock the following morning, after which the fits entirely ceased, not to return, so long as the patient remained in the hospital—more than six months.

The faculty of speech again improved quickly, and in the course of a fortnight was quite restored. The pronunciation of the consonants h, k, s, and x, was the last to be regained. Even afterwards a slight hesitation was sometimes observed. The patient's long delay in the hospital was caused by the fact, that during convalescence after the convulsive attacks atrophy invaded the muscles of the left forearm and hand, preceded and accompanied by violent neuralgia in these parts. The patient also occasionally complained of pain in the forehead.

He was dismissed on the 31st December, 1865, but came into hospital again on the 16th of February, 1866, in a state of unconsciousness. He had the same day had several violent epileptic attacks after taking some glasses of brandy. They were not repeated in the hospital, and he soon recovered. He was dismissed on the 9th of March. Later in the year he got his discharge and disappeared from Stockholm.

This case presents the not unusual example of aphasia occurring during epilepsy. It is less common to see aphasia come and go so often in a comparatively short time. On every occasion that several attacks

occurred soon after one another, the power of speech suffered in a greater or less degree, and was gradually completely lost. When the attacks ceased or became less frequent, the power of expression soon returned. At the same time both intellectual disturbances, and occasionally also paralytic phenomena, set in and disappeared, but the aphasia always preceded them, and was the last to cease. Usually there was a diminished power of moving the tongue, but this certainly depended much on the contemporaneous dulness, and was moreover quite incapable of explaining the defect in the faculty of speech. We often found, especially during a temporary improvement, the movements of the tongue fully defined, while the power of speech had as yet scarcely begun to return. The tongue when protruded always deviated to one side. The other paralytic symptoms—at one time paresis of the right extremities, at another of the face—were dextral. In the attempts I made to get him to write he failed, but I unfortunately forgot to investigate his capability in the art of writing, after he had got better; probably it was even then inconsiderable. He was constantly, and even after the attack ceased, rather sensitive and easily excited, but his loss of the power of speech could not, of course, excepting at the period of the height of the exacerbation, be placed to the account of any intellectual defect. He knew very well what he wished to say, and made great efforts to bring out the words. When he failed he appeared unhappy and perplexed.

As to the etiology and more accurate diagnosis of the case, it is probable that originally the blow on the right side of the vertex produced, by *contre-coup*, a contusion with laceration of some point in the left frontal lobe. During the obliteration of this change, probably by cicatrization and atrophy of the part of the brain, the epilepsy set in. Besides the place which the blow struck, the obstinate pain in the left part of the forehead would show, that the mischief was located in the left frontal lobe; in favour of the left side were the dextral paralytic symptoms. Now, as since the first appearance of Broca's statement, not a single case has been brought forward, where a lesion of the posterior part of the third frontal convolution has occurred without a corresponding and persistent loss of the faculty of speech, and in our case the aphasia was only temporary, came and went, we may rest satisfied that Broca's region was not, in this instance, directly injured. It is possible, on the other hand, that the change was to be found somewhere in the neighbourhood, and that during the repeated epileptic attacks the disturbance of the cerebral circulation affected, in the first place, the immediate surrounding of the previously altered part.

In a therapeutical point of view, the great effect which cupping the nape of the neck had upon the attacks deserves to be noted. After having lasted for many months, and having latterly been often so numerous, that the one attack followed directly on the other, they

entirely ceased immediately after the cupping. The minor abstractions of blood from the left temple I prescribed on the supposition that cerebral lesion existed beneath the part.

2.—*Case of Miliary Tuberculosis; Tubercles in the Brain; Aphasia with Hemorrhage in the Island of Reil.*—Carlsson, aged twenty-one, admitted into the garrison hospital on the 19th September, 1865.

The patient had sickened a week previously with general indisposition, want of appetite, some thirst, disturbed sleep, to which, after a few days, supervened headache. The bowels were torpid during the whole time, with the exception of a couple of days, when aperient medicine was taken. *Status præsens* Sept. 20.—The patient is pale and languid, complains of the above symptoms, which, nevertheless, he believes to be slighter to-day than they were yesterday. The temperature of the skin is little, if at all, elevated. Pulse 72, rather weak. The tongue almost clean; to-day some little appetite. Abdomen sluggish; no motion during the last two days. Spleen not enlarged. The urine contains a small quantity of albumen. Nothing else noteworthy. Phosphoric acid.

Sept 25th.—The above slight symptoms have constantly increased. The patient has generally lain silent and reserved, but when asked how he is he says he is rather better than before. Yesterday evening he began to speak indistinctly, without anything unusual having been previously remarked, and without his state having otherwise indicated the slightest confusion of mind. This continues to-day. He is wakeful and apparently clear in his mind, but silent. His countenance is pale. Pulse 58. Temperature in the axilla, 100°·04 F. When questioned he endeavours to answer with suitable words, but his speech is particularly indistinct, especially certain consonants—k, s, h. Usually he can utter, so as to be tolerably well understood, the first word, or a couple of words, of a sentence, but the rest becomes merely a mumble, impossible to understand. The tongue, rather dry and furred, he protrudes when desired, and moves it with ease in all directions. The two sides of his face are quite symmetrical. The pupils are normal, and quite movable. He shows that he suffers from pain in the forehead and weakness.

26th.—During the course of yesterday he became more drowsy and apathetic. The power of speech diminished more and more, and from the afternoon he ceased to answer. He usually lay upon his back, but sometimes he bent himself up, sometimes stretched himself out in his entire length. Yesterday afternoon he got an aperient enema, which produced a loose motion. To-day he lies in a semi-comatose condition, from which he cannot be completely roused. It is only after several vain efforts that he can be got to stammer out a yes or a no to a question. His appearance is dull; his mouth and his eyes half open; his eyes

at one time quiescent, at another they move slowly from side to side. His tongue is dry. No vomiting. Abdomen hard, moderately swollen. Over the postero-inferior parts of both lungs numerous finely vesicular loose râles are heard. The spleen is not enlarged. The urine is free from albumen. Blister to the nape of the neck.

30th.—The patient's state has continued about the same. No lesions of motility. Speech very imperfect, but he now generally tries to answer. When he is not understood he becomes annoyed and turns away. No vomiting. No motion since the 27th, when he got Glauber's salt, which he afterwards took in doses of a teaspoonful twice a day.

Oct. 2nd.—Increased stupor. Now and then he makes an attempt to answer questions, but succeeds only very imperfectly. Passes urine involuntarily.

3rd.—In the course of yesterday the temperature began to be somewhat higher. The face, previously pale, occasionally flushed. The pulse was increased in frequency. To-day he seems rather more wakeful than before; shakes his head when asked if he slept during the night. When desired he slowly protrudes his tongue; its tip is directed somewhat to the right, but it can, however, with tolerable ease, be brought into another direction. His face is slightly flushed. The conjunctivæ are rather injected. The right pupil is considerably larger than the left, and is not perfectly round; both are slightly, though somewhat movable. After an enema yesterday he had a slight motion; a second followed involuntarily in the night. Yesterday evening a bladder of ice was ordered to the head, which is still continued.

5th.—The patient's state during the last two days is as before. The pupils are as large, tolerably wide, little movable; the right continues to be not entirely round. The right upper eyelid hangs lower than the left, but can be completely raised. When the patient is left to himself, a slight strabismus divergens sometimes comes on. The respiration is so far altered that a number of slow inspirations are followed by a number of more rapid ones. The gum has a tendency to bleed. The tongue is dry. The abdomen is more sunk in.

The patient died the same day at half-past 8 p.m. Temperature and pulse since the 25th :—

	Morning.	Pulse.	Afternoon.	Pulse.
Sept. 25	100°·04 F.	58	101°·56	60
26	101°·84	50	100°·04	54
27	98°·96	52	99°·68	54
28	99°·32	48	102°·92	52
29	99°·68	52	99°·68	50
30	101°·48	58	102°·2	56
Oct. 1	100°·4	60	101°·56	62
2	98°·6	90	101°·84	120

		Morning.	Pulse.	Afternoon.	Pulse.
Oct.	3	101°·12	84	102°·56	120
	4	101°·84	125	102°·2	120
	5	100°·4	120	100°·04	160

Post mortem examination on the 7th October, thirty-eight hours after death :—

Considerable emaciation. General rigidity. Skull of the usual shape. Dura mater congested. On the inside of its left half are found a large number of partly distinct, partly agglomerated, shining, transparent, grey granulations, raised above the surface, as large as the heads of pins. Most of these are situated in the middle of the lateral portion of the left hemisphere; the others are grouped around this point. On the right half of the membrane only two such granulations are met with; they are located in small depressions in the cortical substance of the brain. Corresponding to the part of the left half of the dura, where the granulations are most dense, a number of similar tubercles are found in the soft membranes, which follow chiefly the course of the vessels, and are here and there conglomerated into large irregular masses. Beyond this surface only a few granulations are met with over the convex portion of the left hemisphere. Around the chiasma, and as far as the pons, the soft membranes are infiltrated with a yellowish green turbid fluid. The surfaces of both optic nerves exhibit a tolerably intense redness, the right oculo-motor nerve a general rose colour both on its surface and—although in a somewhat less degree—in its interior; the left abducent nerve is for the length of an inch dark red on the surface. Scattered miliary tubercles are found in the soft membranes on the under surface of the frontal lobes. In the commencement of the right fossa of Sylvius they are met with, though only in small number. In the left fossa, on the contrary, the membranes are sprinkled and thickened with numerous granulations. In the upper part of the fossa of Sylvius a coagulum of blood larger than a nut is found. Corresponding to this part the cortical substance on the posterior portion of the island of Reil, with its immediately surrounding, is softened and discoloured, with a number of point-like hemorrhages. The soft membranes of the brain are in general rather congested. They are easily separated from the surface of the organ. When they are removed a not inconsiderable number of tubercles, of the size of hempseed or less, appear proceeding from the intergyral portion of the pia lodged in small depressions in the cerebral substance. Similar tubercles, even somewhat larger, are found scattered, to the number of from twelve to fifteen, in the cortical substance, mostly in the convex part of the left hemisphere. The majority are situated in the innermost part of the cortical substance, or on the boundary between this and the white substance, but a couple are met with on the outer surface, some within the white substance but quite close to the grey.

Both lateral ventricles are rather dilated; their contents are almost clear, and are of a light red colour. The surrounding parts are in general loose and pale. The white substance is otherwise pale, but, as well as the grey, is of ordinary consistence; the grey is rather congested. The central cerebral ganglia are free from any remarkable change.

On the upper surface of the cerebellum are seen three cheesy, yellowish tumours, as large as peas, of brittle consistence, occupying the grey substance in its entire thickness, and passing into the white. The medulla oblongata exhibits a considerable injection in the corpora restiformia.

The more accurate description of the other organs I shall here omit. Numerous miliary tubercles were found in the lungs, liver, spleen, and kidneys, some few in the serous investment of the heart and on the peritoneum. In the liver a number of cavities, varying in size from that of a hempseed to that of a pea, were met with, filled with a thick yellow fluid, and surrounded by a more or less thick membranous boundary. The solitary glands in the large intestine, as well as, though to a less degree, in the lower part of the small intestine, were considerably swollen, and were here and there ulcerated; in the large intestine were some ulcers as large as Swedish farthings (öre). In their fundus no tubercles were met with.

It is possible that some, on reading the above case, may be inclined to question its title to be brought forward as an example of aphasia. It is, however, to be borne in mind, that during the first twenty-four hours, when the power of speech was affected, the patient's inability to express himself was the only prominent symptom, while no paralysis was met with in the tongue, and there was evidently sufficient intelligence to form ideas and to wish to express them; we are, therefore, I think, quite justified in singling out the defect in the faculty of speech, and of speaking of the case, during the above-mentioned time, as aphasia. During the further development of the case, also, we occasionally found the power of speech altered to a higher degree than was proportionate to the intellectual decay. The patient endeavoured to form words, and from a syllable or two we could perceive that the word was clear to himself, that speech took place within him, while the articulation of the sound, the outer speech, was extremely limited. On *post mortem* examination I first sought the cause in the third frontal convolution, but found it instead in the posterior part of the island of Reil and its immediate neighbourhood (the very bottom of the fissure of Sylvius), that is, in about the place which Dax, junior, and Sanders consider to be most closely connected with the faculty of speech.

3.—*Case of Dextral Hemiplegia and Aphasia.*—This case has been communicated to me by Dr. v. Sydow, of Gefle, who has already, on several occasions, made valuable contributions to the Journal.

Dr. S. was called on the 23rd July, 1866, to the widow of a seaman, aged sixty-two, who the day before, while out walking, on stooping down to tie one of her shoes, suddenly lost the power of speech, became distorted in the face, and began to drag the right leg, so that she was obliged to be supported home. Dr. S. found the right extremities paretic, the mouth drawn obliquely to the left. Her speech was thick, her answers incoherent. Even on the 25th of the same month the distortion of the face was much diminished and the power of movement in the right arm increased, but the patient seemed not to understand rightly what was said to her. In consequence of pressure of business during the then prevailing epidemic of cholera, Dr. S. did not see her until the 27th August, when he observed that her speech was limited to unconnected syllables, mixed with single short words without meaning. On the 25th September the power of motion was considerably increased in the extremities, the obliquity of the face had disappeared, but the tongue still deviated, when protruded, somewhat to the right. Her speech was also very imperfect. By gestures and her general manner, however, she showed unequivocally that she understood what those about her said to her, and she could, in ordinary cases, make herself understood. She listened with an attentive aspect when she was spoken to, and endeavoured to answer, but her answer was only a word or two or a short sentence, which she pronounced clearly and plainly, often repeatedly, after which she ended with the well-modulated enunciation of certain syllables. Her efforts, at the same time, resembled not the endeavour of a stammerer to get the vocal organ to express a definite word, but rather the delight of a child in speaking long series of unconnected syllables and composing words of them, which signify nothing. She had never been able to write. That she to the last retained at least a certain degree of mental powers is shown by the fact, that she then had the Bible read to her, and that before her death she received the sacrament of the Lord's Supper.

On her cerebral affection an extensive bronchial catarrh supervened towards the end of September. She died on one of the last days of the same month.

Dr. S. had not found any affection of the heart.

The brain was sent to me for examination. The preparation had suffered some injury from the long journey, but the following could, without difficulty, be established:—While the upper parts of the brain have their normal arching, the posterior part of the third left frontal convolution, the inferior part of the ascending frontal convolution, and the anterior part of the superior temporal convolution, are collapsed, loose, and easily shaken. The same is the case with the whole of the fissure of Sylvius met with between these two points, including the entire of the island of Reil. The soft membranes can with care be

separated from these parts. The outer portion of the cortical substance has a certain consistence, can be cut, has a yellowish colour, while the inner part, as well as the adjoining white substance, is often softened to the depth of half an inch into an unctuous mass, presenting a white ground colour studded with red points and streaks. Nowhere are there traces of any hemorrhage. The vessels in the left fissure of Sylvius are everywhere permeable. In some places at the divisions a slight thickening is seen, as in some of the other larger vessels at the base of the brain, but the inner surface of the vessel is even and smooth, without any deposition. The other parts of the brain exhibited no remarkable change.

In the outer part of the cortical substance, on the altered part, a large number of fat corpuscles were met with; also small one-nucleated cellular bodies, with or without fatty degeneration of their contents; in the walls of the vessels were often fat globules in variable quantity; in the foci of softening were also found free fat, detritus, and myelin.

The cause of the symptoms in this case is, therefore, found in a considerable change in the left cerebral hemisphere. This occupied both Broca's region and the island of Reil, and the adjoining parts throughout no inconsiderable extent. In the cases of aphasia which have been submitted to dissection, more or less extensive softening has often been found, with or without emboli, in the afferent vessels; more rarely hemorrhages or other changes. Not unfrequently a cardiac lesion has proved to be the cause of the embolism.

It is not easy to decide how the above case commenced. The paralytic attack points to embolism or hemorrhage; but, according to Dr. v. S., no cardiac lesion was met with, and on dissection the vessels were found permeable, without deposition or any remains of hemorrhage. It is possible that in the commencement a capillary hemorrhage occurred in a limited point, and that subsequently softening took place in the surrounding part.

Nor in this instance is the question of simple aphasia, but both a disturbance of intelligence in the form of general dulness, and diminished mobility of the tongue were observed, but neither was, as appears from the history of the case, so important as to be capable of explaining the greatly-diminished power of articulating sounds in speech.

Teale's Amputation—Proposed Modification.

27, Upper Merrion-street, Dublin,
26*th October*, 1868.

TO THE EDITOR, DUBLIN QUARTERLY JOURNAL OF MED. SCIENCE.

Sir,—It has long since occurred to me that a modification of the above operation might with great propriety be proposed, if not adopted. The distinguished surgeon after whom it is named was himself aware of the sacrifice of bone which it involved. To remedy this defect is a subject well worthy of the careful study and best endeavours of surgeons. With this view I am anxious to submit to their notice, and invite their co-operation in, the following experiment on the dead subject, for the purpose of testing the practicability of the proposed plan:—Let the measurements for Teale's amputation be accurately taken and mapped out, but instead of dividing the bone—I am now specially referring to the thigh, at the site directed by him—let it be sawn at the situation corresponding to the inferior termination of *his* posterior flap, and let the superior boundary of the anterior flap be limited by the same plane. The saving of bone thus effected will be considerable, and therefore tend directly to diminish the mortality of thigh amputations. According to this method the anterior flap will be shorter by a fourth than Teale's, and there will be no posterior flap. I and other surgeons have tried this modification, and apparently with all the success that could be wished for. It would be very desirable, however, that it should be thoroughly tested before its adoption in practice, and hence I am desirous of directing the attention of your surgical readers to the subject.

I am, Sir, your obedient servant,

J. H. Wharton.

INDEX

TO THE FORTY-SIXTH VOLUME.

Abdomen, fibro-cystic tumours in, 217—large hydatid tumour of, 235—wounds of in American war, 382.
Abscess on walls of chest, 473.
Acupressure, use of in American war, 393.
Addison's disease, clinical lectures on, by Greenhow, *Rev.*, 404.
Alcohol, therapeutic use of, 122.
Amputation of thigh compared with excision of knee, 1—Teale's operation, remarks on, 6—proposed modification of, 503—results of in American war, 389—at hip-joint, 399.
Anesthesia, produced by oxide of nitrogen, 340—in American war, 393.
Aneurism, treatment of by rest, 122—of aorta, 231, 458.
Aorta, purulent inflammation of, 454—aneurism of, 458.
Aphasia, some cases of, 482.
Arachnitis, cerebro-spinal, 469.
Army, American, surgery of the war, *Rev.*, 375—catalogue of med. museum, *Rev.*, 375.
Artery, wounds of in neighbourhood of joints, 63—wounds of in American war, 389, 393—purulent inflammation of aorta, 454—atheromatous degeneration, 463—See aneurism.
Arthritis, chronic rheumatic of knee, 474.
Ashe, medical education and medical interests, *Rev.*, 448.

Bacon on prolongation of life, 280—advice to physicians, 280—prescription for a bath, 280.
Banks, on abscess in walls of chest, 473.
Beatty, J. G., hydatoid ovum, 238.
Beatty, Thos. Ed., case of enormous fibro-cellular tumour of the vagina, 238—tuberculous disease of the ovum, 456.
Belcher, notes on the medical leper hospitals of Ireland, 36.
Belfast, Medical Society of, 276.
Bennett, case of branched renal calculus, 225—encysted hydrocele from inguinal canal of female, 235.
Berkeley on tar water, 282.
Billing, first principles of medicine, *Rev.*, 427.
Birch on the action, use, and value of oxygen in the treatment of various diseases, *Rev.*, 363.
Bladder, observations on rupture and case of recovery, 306—application of carbonic acid gas to, 363—wounds of in American war, 383.
Bone, sub-periosteal resection, 432, 433—cysts in bone, 433—cystic sarcoma, 433.
Bothriocephalus latus, occurrence of in Ireland, 324.
Brain, fibroma at base of, 250—wounds of in American war, 379.
Breathing, ascending and descending, its value and mechanism, 46.
Butler on the epidemic of cholera at Malta in 1865, 333.

Calabar bean, Fraser on physiological action of, *Rev.*, 138.
Calculus, urinary in female, 222—branched renal, 225—in Whartonian duct, 253—ninety-nine cases of operation for urinary, *Rev.*, 375—removed through urethra, 478.
Cameron, the stockfeeder's manual, *Rev.*, 148.
Cancer, of thyroid gland, 219—cases of the encephaloid form, 269—application of carbonic acid gas to, 363.
Carbonic acid gas, therapeutic use of, 363.
Carmichael prize essays, *Rev.*, 448.
Carroll, on epidemic of malignant measles at Sydney, 479.
Cattle plague, Wirtz on intestinal affection in, 248.
Cerebro-spinal fever—See meningitis.
Chemistry, elements of, theoretical and practical, Miller on, *Rev.*, 143—principles of, founded on modern theories, by A. Naquet, *Rev.*, 145—works on, by Eliot and Storer, Hoffman, Kay-Shuttleworth, Odling, Sutton, Galloway, and Cameron, *Rev.*, 148.
Chest, Waters on diseases of, *Rev.*, 113—wounds of in American war, 381.
Chest, abscess in walls of, 473.
Cholera, epidemic of at Malta in 1865, 333—infectious nature of, 333—Billing on treatment of, 428.

Circulation of blood, Descartes on, 287.
Collins, Ed., report on epidemic cerebro-spinal meningitis, 170.
Collis, case of destruction of hand by machinery, 217.
Colon, great elongation of, 466.
Cork Medical Society, transactions of, 243.
Corley, depressed fracture of skull, 220.
Croly, contributions to operative and preservative surgery, 57, 257—excision of elbow, 57—wounds of arteries in vicinity of joints, 63—tracheotomy to remove foreign body from larynx, 71—cases of large tumours successfully removed by operation, 257—tumours unsuitable for operation, 269.
Cuming, inaugural address to Ulster Medical Society, 276.

Dale, compendium of practical medicine, &c., *Rev.*, 426.
Davis, thesaurus craniorum by, *Rev.*, 123.
Demarquay, essay on pneumatology, *Rev.*, 363—on therapeutic uses of carbonic acid gas, oxygen, &c., 363.
Descartes on circulation, 282.
Diarrhea and dysentery in American war, 394.
Digestion, Pavy on its disorders and their treatment, *Rev.*, 130.
Dysentery and diarrhea in American war, 394.
Dyspepsia, Fox on diagnosis and treatment of, *Rev.*, 130.

Education of students of medicine, 286.
Elliott on caries of the spine and its treatment, 349.
Emphysema, pathology of pulmonary, 119.
Epilepsy, slipping of artificial teeth into larynx during a fit, 71.
Excision, of knee and amputation compared, 1—of knee for gunshot wounds, 27, 392—of elbow, 57, 391—in American war, 391.
Eye, encephaloid disease of in infant, 274.

Fetus, intra-uterine wounds, 26—intra-uterine fractures, 462.
Fever, camp or typho-malarial in American war, 394.
Fever, cerebro-spinal, see meningitis.
Fever (periodical), Madruzza on bleeding in cold stage of, *Rev.*, 153.
Fever, typhoid, ulceration of intestine in, 227.
Finny, aneurism of aorta, 458.
Fleming, on calculus removed through urethra, 478.
Foot, fracture of os calcis from muscular action, 254.
Fox on the diagnosis and treatment of the varieties of dyspepsia, *Rev.*, 130.
Fracture, depressed of skull, 220—of os calcis from muscular action, 254—of femur in American war, 385—intra-uterine, 462.
Fraser on calabar bean, *Rev.*, 138.
Frazer, W., on the bothriocephalus latus and its occurrence in Ireland, 324.
Frédol, le monde de la mer, *Rev.*, 142.
Funis, postural treatment of prolapse of, 89.

Gases, therapeutic uses of, 363.
Genito-urinary organs, wounds of in American war, 384.
Gonorrhea, rheumatism from after parturition, 241—and syphilis identical, 430.
Gordon on permanent patency of aortic valves, 477—on secondary rheumatic pericarditis, 467—on purulent inflammation of aorta, 454.
Gout, deposits in kidney and joints, 226—gout and rheumatism in relation to diseases of the heart, Barclay on, *Rev.*, 417—pathology of, 417.
Greenhow, clinical lectures on Addison's disease, *Rev.*, 404.
Grimshaw on cerebro-spinal arachnitis, 469.
Gunshot wounds of knee, 27—of head, 377—of pelvic viscera, 460.
Guy on forensic medicine, *Rev.*, 413.

Hamilton, Edward, on whitlow, 319—on chronic rheumatic arthritis, 474.
Hamilton, John, large hydatid tumour of abdomen, 235.
Hammond, lectures on the venereal disease, *Rev.*, 428.
Hand, destruction of by machinery, 217.
Hardy on scarlatina during pregnancy and the puerperal state, 389.
Harley, case of gonorrheal rheumatism occurring after parturition, 241.
Hayden, case of œsophageal obstruction, with diffuse inflammation, 223.
Head, gunshot injuries of in American war, 379.
Heart, on ascending and descending breathing as a symptom in affections of, 46—on sounds of, 121—pericarditis, 120—Peacock on malformation of, *Rev.*, 151—wounds of in American war, 381—Barclay on gout and rheumatism in relation to diseases of, *Rev.*, 417—anemic murmurs at apex, 421—secondary rheumatic pericarditis, 467—adherent pericardium, 468—spontaneous rupture of, 471—permanent patency of aortic valves, 477.
Heath on injuries and diseases of the jaws, *Rev.*, 431.

Hemorrhage, occurrence of secondary in American war, 388.
Hermaphroditism, two cases of, 52.
Hewitt, obstruction of bowels, 463.
Hip-joint, wounds of in American war, 385, 399.
Hughes, J. S., short notes on Nice, *Rev.*, 437.
Hydatids, large tumour of abdomen, 235—of uterus, see ovum.
Hydrocele, encysted from inguinal canal of female, 235.

Intestines, typhoid ulceration of, 227—affections of in cattle plague, 248—wounds of in American war, 382—obstruction of, 463—great elongation of colon, 466.

Jaundice, Murchison on, *Rev.*, 438.
Jaws, Heath on injuries and diseases of, *Rev.*, 431—operations on, 432.
Jennings on aneurism of aorta, 231.
Joint, see excision—wounds of arteries in the neighbourhood of, 63—wounds of in American war, 385—amputations at, 389, 399.
Jurisprudence, Taylor on medical, *Rev.*, 413.

Kidd, Charles, on the oxide of nitrogen as an anesthetic agent, 340.
Kidd, G. H., on the postural treatment of prolapse of the funis, 89—case of numerous intra-uterine fibrous polypi, 229—case of intra-uterine fractures, 462.
Kidney, case of branched renal calculus, 225—origin of the congenital renal cystoid, 256—on diseases of super-renal capsules and Addison's disease, by Greenhow, *Rev.*, 404.
Knee, excision of compared with amputation, 1—excision for injury, 9, 27—wounds of in American war, 385—chronic rheumatic arthritis, 474.

Labour, version in contracted pelvis, 18—postural treatment of prolapse of funis, 89.
Larynx, seven artificial teeth in, 81—phthisis laryngea, 216.
Laughing gas as an anesthetic agent, 340.
Lepers, medical hospitals for in Ireland, 36.
Life, prolongation of, Bacon on, 280—Descartes on, 282.
Lithotrity in female, 222.
Little on ascending and descending breathing, its value and its mechanism, 46.
Little, T. E., on spontaneous rupture of the heart, 471.
Liver, wounds of in American war, 382—clinical lectures on diseases of, by Murchison, *Rev*, 438—abscess of, 439.
Lungs, on inoculation as a means of diagnosis in phthisis, 94—pneumonia, 114—structure of, 115—emphysema, 119—wounds in American war, 381. See phthisis and tubercle.
Lyons, case of fibro-cystic tumours in abdomen, 217—on retention of urine from tumours pressing on ureters, 217—typhoid ulceration of intestine, 227.

MacCormac on amputation of thigh compared with excision of knee, 1.
MacSwiney, case of phthisis, with phthisis laryngea, 216.
Madden on uterine hydatidiform disease, or cystic degeneration of ovum, 290.
Mapother, medical profession and its educational licensing bodies, *Rev.*, 448.
Malta, epidemic of cholera at in 1865, 333.
Marcet on inoculation as a means of diagnosis in tubercular phthisis, 94.
Marshall, outlines of physiology by, *Rev.*, 435.
Measles, epidemic of malignant at Sydney, 479.
Medicine, compendium of practical, by Dale, *Rev.*, 426—Billing on first principles of, *Rev.*, 427.
Medicine, forensic, Guy on, *Rev.*, 413—Taylor on, *Rev.*, 413.
Medicine, progress of, compared with contemporary science. 279—education of students of, 286.
Meningitis, epidemic, Stillé on, *Rev.*, 155—publications of the Massachusetts Med. Society on, *Rev.*, 155—clinical observations on by Ziemesson and Hess, *Rev.*, 155—history of, 155, 170—question of contagion, 157, 208—etiology of, 158, 208—pathology of, 158, 202—report on, 170—symptoms of, 182—diagnosis of, 207—relation to epizootics, 208—cases of, 209, 469.
Mercury as an antiphlogistic, 120.
Mer, le monde de la, by Frédol, *Rev.*, 142
Miller, elements of chemistry, theoretical and practical, *Rev.*, 143.
Moore, W. D., selections from the Dutch archives of medical and physical science, translated by, 248—some cases of aphasia, by Dr. Œdmansson, translated by, 482.
Murchison, clinical lectures on diseases of the liver, jaundice and abdominal dropsy, *Rev.*, 438.

Naquet, principles of chemistry by, *Rev.*, 145.
Natural history of the sea, Frédol on, *Rev.*, 142.

Nerves, gunshot and other injuries of, *Rev.*, 375.
Nice, short notes on, by J. S. Hughes, *Rev.*, 437.
Nitrogen, oxide of as an anesthetic agent, 340.

Obstetrical Society of Dublin, proceedings of, 238.
Œdmansson, some cases of aphasia, 482.
Œsophageal obstruction, with diffuse inflammation from impacted bone, 223.
Ovum, cystic degeneration of, cases of, 238, 290—literature of, 290—causes of, 293—treatment, 305.
Ovum, tuberculous disease of, 456.
Oxygen, therapeutic uses of, 363—mode of exhibition, 372.

Pancreas, wounds of in American war, 383.
Paraplegia, treated by ice to spine, 243.
Paronychia, Ed. Hamilton on, 319.
Pathological Society of Dublin, proceedings of, 216, 454.
Pavy on the diagnosis and treatment of the varieties of dyspepsia, *Rev.*, 130.
Peacock on malformations of the heart, *Rev.*, 151.
Pelvis, version in contracted, 18—wounds of in American war, 383—gunshot wounds of viscera of, 460.
Pepsine, therapeutic use of, 131.
Peritoneum, washing of in cases of rupture of bladder, 306.
Peritonitis, case of chronic, 226.
Phthisis, see tubercle — with phthisis laryngea, 216.
Physicians, Medical Society of College of, transactions, 479.
Physiology, outlines of, by Marshall, *Rev.*, 435.
Physostigma venosum, Fraser on physiological action of, *Rev.*, 138.
Pneumonia, pathology and treatment of, 114.
Polypi, case of numerous intra-uterine, 229.
Porter, urinary calculus in female, lithotrity for, 222.
Pregnancy, scarlatina during, 329.
Puerperal state, scarlatina during, 389.
Pyemia, occurrence of in American war, 388.

Quarantine, strictures on system, 339.

Resection, sub-periosteal, 432.
Respiration, ascending and descending, 46.
Rheumatism, gonorrheal, after parturition, 241—Barclay on gout and rheumatism in relation to diseases of the heart, *Rev.*, 417—secondary pericarditis, 467.
Rickets as a cause of intra-uterine fractures, 410.
Ringland on version in contracted pelvis, 18.

Salivary calculus, 253.
Scarlatina during pregnancy and the puerperal state, 329.
Scrofula, see tubercle.
Sea, Frédol on the world of, *Rev.*, 142.
Skull, catalogue of the skulls of the various races of man in the collection of J. B. Davis, *Rev.*, 123—case of depressed fracture, 220—gunshot injuries of, 377.
Southey on tubercle, *Rev.*, 94.
Spine, Elliott on caries of, and its treatment, 349 — gunshot injuries of in American war, 381—ramolissement of cord, 463.
Spleen, wounds of in American war, 383.
Stokes, cancer of thyroid gland, 219.
Stomach, Pavy on digestion and its disorders, &c., *Rev.*, 130—Fox on dyspepsia, *Rev.*, 130—*post mortem* solution of, 132.
Stricture, Richardson on the instantaneous method of treating, 74.
Supra-renal capsules, Greenhow on disease of, *Rev.*, 404.
Surgery, contributions to operative and preservative, 57.
Surgery of American war, *Rev.*, 375.
Sydney, epidemic of malignant measles at, 479.
Syphilis, Association for Preventing the Extension of the Contagious Diseases Act to the civil population, 160, 428—lectures on venereal disease, by Hammond, *Rev.*, 428 — gonorrhea and syphilis identical, 430.

Tapeworm, occurrence of the broad in Ireland, 324.
Tar water, Berkeley on use of, 282.
Taylor, principles and practice of medical jurisprudence, *Rev.*, 413.
Teeth, slipping of artificial into larynx, 71.
Testis, encephaloid disease of, 274.
Tetanus, cases of in American war, 388.
Thesaurus craniorum, by J. B. Davis, *Rev*, 153.
Thompson on gunshot wound of the knee, excision of joint, 27.
Thorpe, observations on rupture of bladder, and case of recovery from, 306.
Thyroid gland, cancer of, 219.
Townsend, E. B., jun., case of paraplegia treated by ice to spine, 243.

Tracheotomy to remove a foreign body, 71—in American war, 393.
Tubercle, recent researches on the pathology of, *Rev.*, 74—Villemin on, *Rev.*, 94—Southey on, *Rev.*, 94—Marcet on inoculation as a means of diagnosis, *Rev.*, 74—Virchow's views on pathology of, 94—histology of, 95—relation to scrofula, 102—transmission by contagion, 105.
Tumours, fibro-cystic of abdomen, 217—enormous fibro-cellular of vagina, 238—hydatid of abdomen, 235—cases of large successfully removed by operation, 257—cases unsuitable for operation, 269.

Ulster Medical Society, inaugural address, 276.
Urethra, Richardson on the instantaneous method of treating stricture, 74—calculus removed through, 478.
Urine, retention of from tumours pressing on ureters, 217—calculus in female, 222—branched renal, 225—wounds of genito-urinary organs in American war, 384.
Uterus, case of unusually numerous fibrous polypi, 229—hydatidiform disease of, 290—application of carbonic acid gas to, 363.

Vagina, case of enormous fibro-cellular tumour of, 238.
Venereal disease, see syphilis.
Version in contracted pelvis, 18.
Villemin on tuberculosis, *Rev*, 98.
Virchow, views on pathology of tubercle, 94.

Waters on diseases of the chest, *Rev.*, 113.
Wharton, letter by, proposing a modification of Teale's amputation, 503.
White, gunshot wounds of pelvic viscera, 460.
Whitlow, E. Hamilton on, 319.
Woods, history of two cases of hermaphroditism, 52.
Worm, occurrence of broad tape in Ireland, 324.
Wounds, intra-uterine of fetus, 26—gunshot of knee, excision of joint, 27—of arteries, 63—of hand by machinery, 217—treatment of by local applications of gases, 363—gunshot in American war, 377—gunshot of pelvic viscera, 460